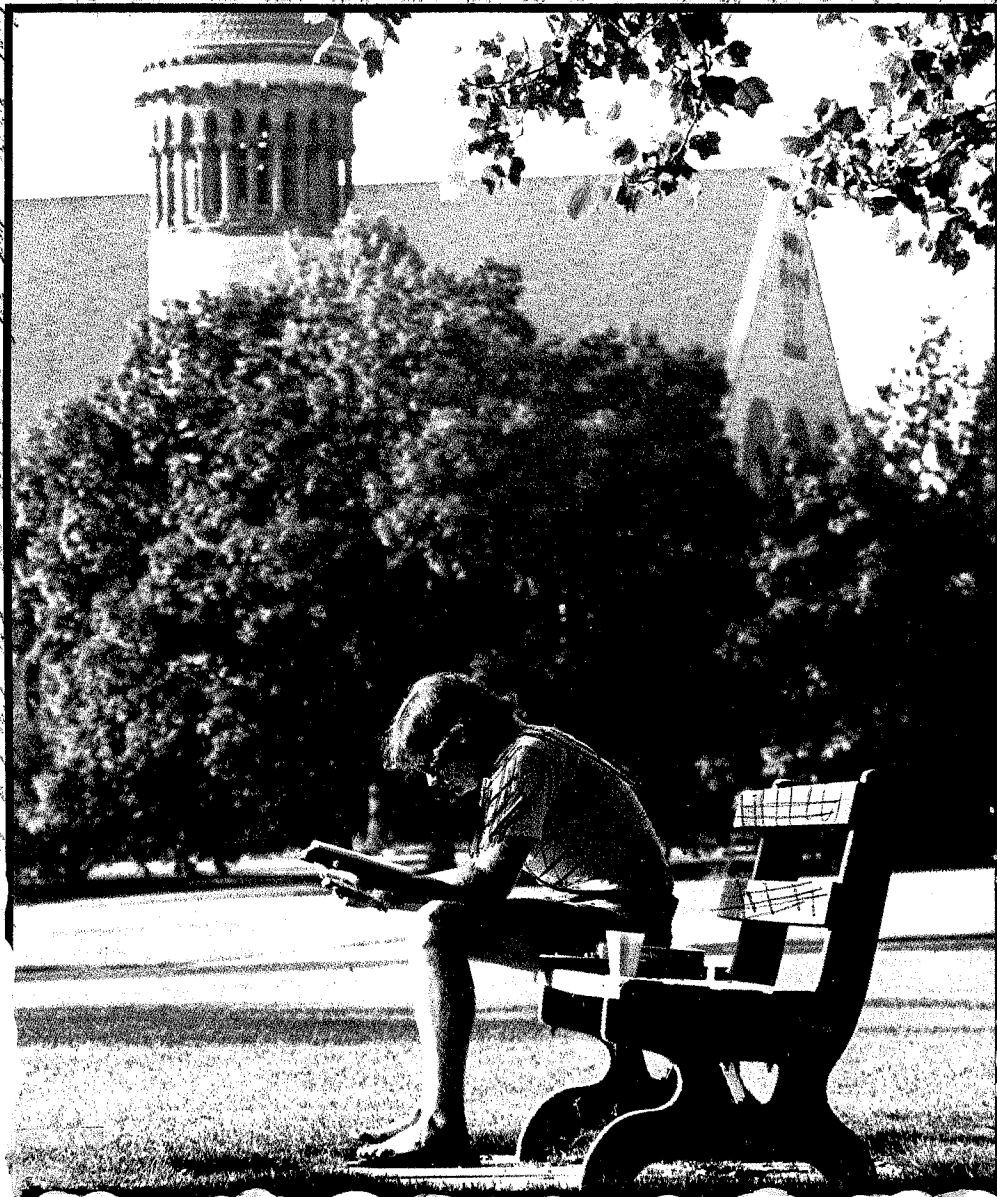


The Ohio State University Bulletin

Course Offerings 1977-78



Bulletin Series

Copies of the University's 16 bulletins are available without charge from the Admissions Office. Within Ohio, complete sets of the series also may be found in high school guidance libraries, in college and university libraries, in major state government offices, and in Cooperative Extension Service offices. The Bulletin Series contains:

1. General Information
Admissions, Scholarship and
Financial Aid Applications
2. Graduate School
3. Course Offerings
4. College of Administrative Science
5. College of Agriculture and Home
Economics
6. Colleges of the Arts and Sciences
7. College of Dentistry
8. College of Education
9. College of Engineering
10. College of Law
11. College of Medicine
12. College of Optometry
13. College of Pharmacy
14. College of Veterinary Medicine
15. Agricultural Technical Institute
16. College of Social Work

Initial copies of specific college bulletins are available, without charge, together with appropriate application forms from: Admissions Office, The Ohio State University, Lincoln Tower—Third Floor, 1800 Cannon Drive, Columbus, Ohio 43210.

The Course Offerings Bulletin is distributed concurrently with registration materials to newly enrolled students and former students returning to OSU.

Additional or replacement copies can be purchased from OSU Bookstores on all campuses.

While every effort is made to provide accurate and up-to-date information, the University reserves the right to change without notice statements in the Bulletin Series concerning rules, policies, fees, curricula, courses, or other matters. Courses may be closed due to limited resources or facilities or cancelled due to unavailability of faculty or insufficient enrollment.

The Ohio State University Bulletin

Course Offerings 1977-78

Book 3



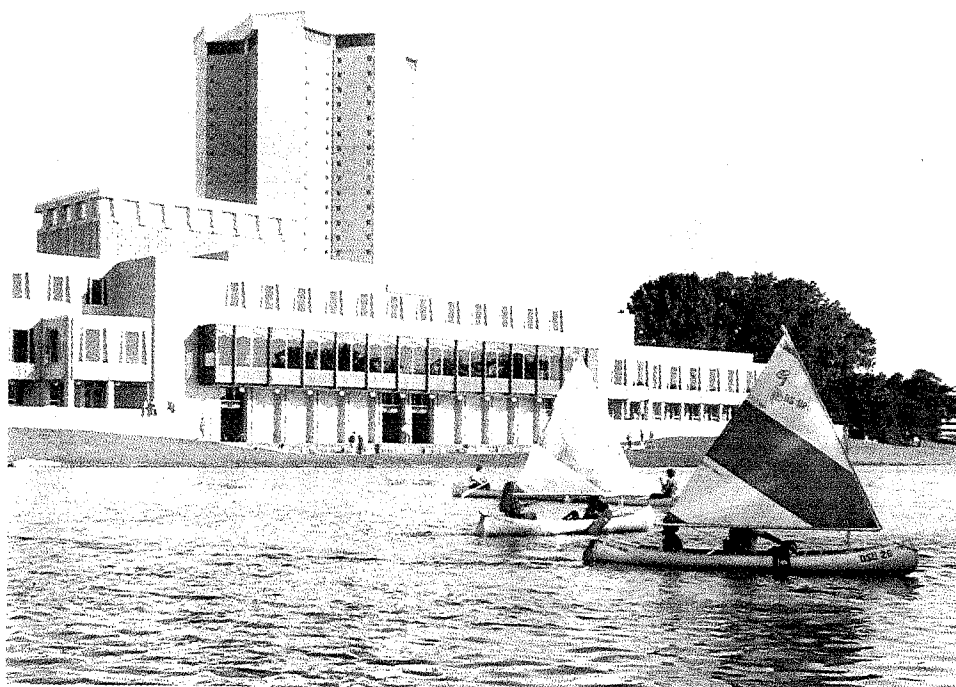
The Ohio State University Bulletin

Volume LXXXII No. 3 July 29, 1977

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University Calendar

Subject to Change

Winter Quarter 1978

January 2	Legal holiday—New Year's Day celebrated—offices closed (Mon.)
January 3	Classes begin, 8:00 a.m. (Tues.)
January 16	Legal holiday—Martin Luther King Day—No classes, offices closed (Mon.)
February 20	Legal holiday—President's Day—No classes, offices closed (Mon.)
March 13	Last day of regularly scheduled classes (Mon.)
March 15-18	Final examinations (Wed.-Sat.)
March 16	Winter commencement, 9:30 a.m., St. John Arena (Thurs.)

	Undergraduate (Columbus and Regional Campuses)	Graduate and Professional*
Admission dates		
Last day to file applications for admission (Exception: Applications for undergraduate evening program and part-time continuing education accepted through December 30.)	Dec. 1	Dec. 1
Registration dates (scheduling courses)		
Continuing students (enrolled Autumn Quarter)		
Registration materials released in college/regional campus offices	Oct. 18	Oct. 18
First day to file registration forms	Oct. 19	Oct. 19
Last day to file registration forms without penalty	Oct. 28	Oct. 28
Returning students (not enrolled Autumn Quarter)		
Registration materials released by mail	Oct. 18	Oct. 18
First day to file registration forms	Oct. 19	Oct. 19
Last day to request registration forms	†Oct. 28	Dec. 31
Last day to file registration forms	†Nov. 7	Dec. 31
New students		
Registration materials released by mail**	Oct. 18	Oct. 18
First day to file registration forms	Oct. 19	Oct. 19
Last day to file registration forms	†Nov. 7	Dec. 31
Fees		
Last day to pay fees	Dec. 29	Dec. 31
Last day for withdrawal from the University with any refund of fees	Jan. 31	Jan. 31

Spring Quarter 1978

March 27	Classes begin, 8:00 a.m. (Mon.)
May 29	Legal holiday—Memorial Day—No classes, offices closed (Mon.)
June 2	Last day of regularly scheduled classes (Fri.)
June 5-8	Final examinations (Mon.-Thurs.)
June 9	Spring commencement, 9:30 a.m., Ohio Stadium (Fri.)

	Undergraduate (Columbus and Regional Campuses)	Graduate and Professional*
Admission dates		
Last day to file applications for admission (Exception: Applications for undergraduate evening programs and part-time continuing education accepted through March 24.)	Feb. 28	Feb. 28
Registration dates (scheduling courses)		
Continuing students (enrolled Winter Quarter)		
Registration materials released in college/regional campus offices	Jan. 31	Jan. 31
First day to file registration forms	Feb. 1	Feb. 1
Last day to file registration forms without penalty	Feb. 14	Feb. 14
Returning students (not enrolled Winter Quarter)		
Registration materials released by mail	Jan. 31	Jan. 31
First day to file registration forms	Feb. 1	Feb. 1
Last day to request registration forms	†Feb. 14	Mar. 25
Last day to file registration forms	†Feb. 22	Mar. 25
New students		
Registration materials released by mail**	Jan. 31	Jan. 31
First day to file registration forms	Feb. 1	Feb. 1
Last day to file registration forms	†Feb. 22	Mar. 25
Fees		
Last day to pay fees	Mar. 23	Mar. 25 (12 noon)
Last day for withdrawal from the University with any refund of fees	Apr. 24	Apr. 24

Summer Quarter 1978

June 19	Quarter and first term classes begin, 8:00 a.m. (Mon.)
July 4	Legal holiday—Independence Day—No classes, offices closed (Tues.)
July 19	Last day of regularly scheduled classes for first term (Wed.)
July 20-21	Final examinations for first term courses only—at regular class hours (Thurs. and Fri.)
July 24	Second term classes begin, 8:00 a.m. (Mon.)
August 25	Last day of regularly scheduled classes for quarter and second term courses (Fri.)
August 28-31	Final examinations for quarter and second term courses (Mon.-Thurs.)
August 31	Summer commencement, 9:30 a.m., St. John Arena (Thurs.)
September 4	Legal holiday—Labor Day—offices closed (Mon.)

	Undergraduate (Columbus and Regional Campuses)	Graduate and Professional*
Admission dates		
Last day to file applications for admission (Exception: Applications for undergraduate evening programs and part-time continuing education accepted through June 16.)	June 1	June 1
Registration dates (scheduling courses)		
Continuing students (enrolled Spring Quarter)		
Registration materials released in college/regional campus offices	Apr. 25	Apr. 25
First day to file registration forms	Apr. 26	Apr. 26
Last day to file registration forms	June 15	June 17
Returning students (not enrolled Spring Quarter)		
Registration materials released by mail	Apr. 25	Apr. 25
First day to file registration forms	Apr. 26	Apr. 26
Last day to request registration forms	June 15	June 17
Last day to file registration forms	June 15	June 17
New students		
Registration materials released by mail**	Apr. 25	Apr. 25
First day to file registration forms	Apr. 26	Apr. 26
Last day to file registration forms	June 15	June 17
Fees		
Last day to pay fees		
Quarter and first term	June 15	June 17 (12 noon)
Second term	July 19	July 21
Last day for withdrawal from the University with any refund of fees		
First term	July 3	July 3
Quarter	July 17	July 17
Second term	Aug. 7	Aug. 7

Autumn Quarter 1978

September 20	Classes begin, 8:00 a.m. (Wed.)
October 9	Legal holiday—Columbus Day—no classes, offices open (Mon.)
November 10	Legal holiday—Veterans' Day—no classes, offices closed (Fri.)
November 23	Legal holiday—Thanksgiving—no classes, offices closed (Thurs.)
November 24	Student vacation—no classes, offices closed (Fri.)
December 1	Last day of regularly scheduled classes (Fri.)
December 4-7	Final examinations (Mon.-Thurs.)
December 8	Autumn commencement, 9:30 a.m., St. John Arena (Fri.)
December 25	Legal holiday—Christmas—offices closed (Mon.)

	Undergraduate (Columbus and Regional Campuses)	Graduate and Professional*
Admission dates		
Last day to file applications for admission (Exception: Applications for undergraduate evening programs and part-time continuing education accepted through September 16.)	To be announced for Columbus; Aug. 15 for regional campuses	Aug. 15
Registration dates (scheduling courses)		
Continuing students (enrolled Spring or Summer Quarters)		
Registration materials released by mail to spring students; in colleges/regional campus offices to summer students	July 11	July 11
First day to file registration forms	July 12	July 12
Last day to file registration forms without penalty	Aug. 2	Aug. 2
Returning students (not enrolled Spring or Summer Quarters)		
Registration materials released by mail	July 11	July 11
First day to file registration forms	July 12	July 12
Last day to request registration forms	†Aug. 2	Sept. 18
Last day to file registration forms	†Aug. 10	Sept. 18
New students		
Registration materials released by mail**	July 11	July 11
First day to file registration forms	July 12	July 12
Last day to file registration forms	†Aug. 10	Sept. 18
Fees		
Last day to pay fees	Sept. 16 (12 noon)	Sept. 19
Last day for withdrawal from the University with any refund of fees	Oct. 18	Oct. 18

† These dates represent the deadlines necessary for registration forms to be processed via computer assisted scheduling. Courses requested on registration forms filed after these dates are less likely to be available.

* Individual college calendars, last days to file applications for admission, and registration dates may vary for the professional Colleges of Dentistry, Law, Medicine, Optometry, Pharmacy, and Veterinary Medicine. Consult the appropriate college offices for these dates.

** New students required to participate in the undergraduate orientation program will receive registration materials when they attend the program.

Organization of Instructional Units

The instructional units — colleges, schools, departments, academic faculties, divisions and centers — of the University are grouped as follows:

College of Administrative Science

Academic Faculties

Accounting
Finance
Labor and Human Resources
Management Science
Marketing

School of Public Administration Center

Real Estate
Education and Research

College of Agriculture and Home Economics

Departments

Agricultural Economics and Rural Sociology
Agricultural Education
Agricultural Engineering
Agronomy
Animal Science
Dairy Science
Food Science and Nutrition
Horticulture
Plant Pathology
Poultry Science

School of Home Economics

Departments

Family Relations and Human Development
Home Economics Education
Home Management and Housing
Human Nutrition and Food Management
Textiles and Clothing

School of Natural Resources

Agricultural Technical Institute

Colleges of the Arts and Sciences

College of the Arts

Departments

Art
Art Education
Dance
Industrial Design
Theatre

Division

History of Art

School of Music

College of Biological Sciences

Departments

Biochemistry
Biophysics
Botany
Entomology
Genetics
Microbiology
Zoology

College of Humanities

Departments

Black Studies
Classics
East Asian Languages and Literatures
English
German
History
Linguistics
Philosophy
Romance Languages and Literatures
Slavic Languages and Literatures

Divisions

Comparative Studies in the Humanities
Hebrew Language and Literature

Centers

Jewish Studies
Medieval and Renaissance Studies

College of Mathematics and Physical Sciences

Departments

Astronomy
Chemistry
Geodetic Science
Geology and Mineralogy
Mathematics
Physics
Statistics

College of Social and Behavioral Sciences

Departments

Anthropology
Communication
Economics
Geography
Political Science
Psychology
Sociology

Center

University Center for International Studies

School of Journalism

College of Dentistry

Division

Dental Hygiene

College of Education

Academic Faculties

Arts in Education, The
Curriculum and Foundations
Early and Middle Childhood Education
Educational Administration
Educational Development
Exceptional Children
Humanities Education
Industrial Technology
Science and Mathematics Education
Special Services
Vocational-Technical Education

School of Health, Physical Education, and Recreation

College of Engineering

Departments

Aeronautical and Astronautical Engineering
Aviation
Ceramic Engineering
Chemical Engineering
Civil Engineering
Computer and Information Science
Electrical Engineering
Engineering Graphics
Engineering Mechanics
Industrial and Systems Engineering
Mechanical Engineering
Metallurgical Engineering
Photography and Cinema
Welding Engineering

School of Architecture

Departments

Architecture
City and Regional Planning
Landscape Architecture

Graduate School

College of Law

College of Medicine

Departments

Anatomy
Anesthesiology
Family Medicine
Medical Microbiology
Medicine
Obstetrics and Gynecology
Ophthalmology
Otolaryngology
Pathology
Pediatrics
Pharmacology
Physical Medicine
Physiological Chemistry
Physiology
Preventive Medicine
Psychiatry
Radiology
Surgery

School of Allied Medical Professions

School of Nursing

College of Optometry

College of Pharmacy

Divisions

Administrative and Social Sciences
Clinical Pharmacy and Professional Practice
Medicinal Chemistry
Pharmaceutics and Pharmaceutical Chemistry
Pharmacognosy and Natural Products
Pharmacology

College of Social Work

University College

College of Veterinary Medicine

Departments

Veterinary Anatomy
Veterinary Clinical Sciences
Veterinary Pathobiology
Veterinary Physiology and Pharmacology
Veterinary Preventive Medicine

Other Departments

Air Force Aerospace Studies
Military Science
Naval Science

University Academic Policies

Student Responsibility

The student is responsible for knowing his/her own standing scholastically in reference to the published regulations and standards of the University and of his/her college.

Marking System

The grades/marks given in the enrollment units of the University are as follows:

A, A— The instructor judged the student to have satisfied the stated objectives of the course in an excellent manner. The student's performance was judged to be in this range of high quality based upon a comparison with other students in the course, and/or with students who have taken the course previously, and/or the instructor's personal expectations relative to the stated objectives of the course, based on his/her experience and expertise.

B+, B, B— The instructor judged the student to have satisfied the stated objectives of the course in an above average manner. The student's performance was judged to be in this range of above average quality based upon a comparison with other students in the course, and/or with students who have taken the course previously, and/or the instructor's personal expectations relative to the stated objectives of the course, based on his/her experience and expertise.

C+, C, C— The instructor judged the student to have satisfied the stated objectives of the course in an average manner. The student's performance was judged to be in this range of average quality based upon a comparison with other students in the course, and/or students who have taken the course previously, and/or the instructor's personal expectations relative to the stated objectives of the course, based on his/her experience and expertise.

D+, D The instructor judged the student to have satisfied the stated objectives of the course in a low but acceptable manner. The student's performance was judged to be in this range of below average but acceptable quality based upon a comparison with other students in the course, and/or with students who have taken the course previously, and/or the instructor's personal expectations relative to the stated objectives of the course, based on his/her experience and expertise.

E The instructor judged the student not to have satisfied the stated objectives of the course. Credit for a course in which the mark E has been received can be obtained only by repeating and passing the course in class. (See Rules 35.11 and 37.09.)

EM Examination.

This mark indicates credit given to students registered in the University on the basis of examinations taken prior to or after admission to the University. The level of achievement which must be demonstrated by the student on these examinations in order to receive EM credit shall be determined by the Department or School in which the course is offered for credit, in accord with the criteria for the award of letter grades. This credit, up to a maximum of 45 credit hours, shall be assigned only upon the authorization of the chairperson of the Department or the Director of the School and with the approval of the authorized representative of the Dean or Director of the student's enrollment unit. Additional examination credit hours may be assigned specific curricular programs with the prior approval of the Council on Academic Affairs. Examination credit shall not be given to a student for a course in which he/she has received a mark at this University. No credit points are allowed for courses in which a mark of EM is given.

I Incomplete.

An I indicates that the student has completed a major portion of the work in the course in a satisfactory manner, but for reasons judged by the instructor to be legitimate, a portion of the course requirements remains to be completed.

The mark I shall be reported to the Office of Records together with the mark which the Office of Records is authorized to enter on the student's official permanent record unless a different mark is reported to the Office of Records in the manner and within the time described below.

The student must complete the work so that the instructor of the course may report the final mark at the earliest possible time, but not later than noon of the sixth Saturday of the quarter following the quarter in which the I was received. For legitimate reason, the instructor may establish a deadline for the completion of the work which is within the maximum time permitted. Upon petition of the student within this period, the authorized representative of the Dean or Director of the enrollment unit in which the student was last enrolled after consultation with the instructor of the course, or, if the instructor is unavailable, the Chairperson of the department involved, may for good reason allow a student additional time in which to complete the work. Generally, this shall not be longer than the end of the quarter following the quarter in which the I was received. Any decision extending the period shall set forth the time in which the student shall complete the work and a copy of the decision shall be forwarded to the Office of Records.

As soon as the incomplete work has been made up, the instructor, or in the case of his/her absence from the University, the Department Chairperson or the Director of the School, shall file the proper mark in the Office of Records. Until such time as a final mark is recorded the credit for the mark I shall be counted as hours only, and shall not be considered in determining a student's point-hour ratio under Rule 37.09.

In no case shall a student who has received the mark I be permitted to repeat the course in which such mark was received until such time as the I has been removed and then only in such cases as fall within Rule 37.09.

K Credit

This mark shall be used for work credited from other institutions by the Director of Admissions only. K credit shall be counted as hours only and shall

not be considered in determining a student's point-hour ratio.

P Progress

This mark is used to indicate that the student has shown satisfactory progress in a series or sequence of courses where the mark is not recorded until the final quarter of the series or sequence is completed. Until such time as a final mark is recorded the mark of P shall be given and the credit shall be counted as hours only, and shall not be considered in determining a student's point-hour ratio under Rule 37.05. When a final mark is submitted by the instructor, all previous P marks shall assume and be recorded with the value of the final mark.

P mark is not to be used for any course approved for the S/U mark.

PA/NP Pass/Non-Pass

This mark may be used at the option of the student.

This grading pattern may be chosen by the undergraduates or Continuing Education students for a maximum of 30 credit hours. Among these 30 credit hours, an undergraduate student may elect Pass/Non-Pass grading for courses in fulfillment of the curricular requirements of Rule 31.0701 and/or the physical education requirement of Rule 31.0704.

An undergraduate student who has accumulated a point-hour ratio of 2.0 or higher may elect courses for Pass/Non-Pass that are not required or designated as required electives in the curriculum leading to the degree for which the student is a candidate.

A student registered in the Division of Continuing Education who has an accumulated point-hour ratio of 2.0 or higher may elect courses for Pass/Non-Pass for a maximum of 30 credit hours.

Hours graded Pass (PA) count toward the degree. Pass/Non-Pass marks (PA/NP) are not computed in the point-hour ratio (average) of the student.

Before noon of the sixth Saturday of a quarter or the third Saturday of a term, a student must have declared his/her intention to take a course on the Pass/Non-Pass basis by filing the appropriate forms with the Dean or Director of his enrollment unit (students in

physical education and military science file the forms in those departmental offices). A student may not change to or from the Pass/Non-Pass Option after noon of the sixth Saturday of a quarter or the third Saturday of a term.

The grade Pass (PA) is the equivalent of the grades A, A-, B+, B, B-, C+, C, C-, D+, D, and the grade Non-Pass (NP) is the equivalent of the grade E.

R Registered to Audit

This mark indicates that the student has registered to audit the course. No credit hours shall be awarded for this mark.

S/U Satisfactory/Unsatisfactory

The mark S may be used to record either satisfactory progress in or completion of work, provided that the course has been approved for this mark by the Dean of the College offering the course, and in the case of courses carrying graduate credit, by the Dean of the Graduate School. It shall be used as an alternative to U or I in all individual studies courses whatever their number. S credit shall be counted as hours only, and shall not be considered in determining a student's point-hour ratio.

The mark U shall be used for unsatisfactory work in courses in which a student would be entitled to the mark of S if the work has been satisfactory. No credit shall be given for work marked U. This mark shall not be considered in determining a student's point-hour ratio.

W Withdrew

See Withdrawal from Courses or from the University on page 10.

Alteration of Marks

A mark filed in the Office of Records is a part of the official records of the University. It is not subject to change except upon written authorization of the instructor of the course, the appropriate Department Chairperson or Director of the School and the Dean of the instructor's college and of the authorized representative of the Dean or Director of the student's enrollment unit.

Such changes shall be made only when error has been discovered in evaluation or recording of a grade. In no case will a grade be revised in accordance with criteria other than those applied to all students in the class. Action to change a grade must be initiated before the end of the second succeeding quarter.

Repetition of Courses

An undergraduate student who has received a grade of D+, D or E in a course or courses taken during the freshman year (the period during which the student accumulates the first 44 credit hours on the official permanent record) may repeat or substitute up to 15 credit hours of such courses subject to the following regulations:

- The course serving as a repetition or substitute for a course in which a grade of D+, D or E was received must be recommended by the student's adviser and have the approval of the authorized representative of the Dean, or Director of the student's enrollment unit, before noon of the third Saturday of the quarter in which the substitute course is taken.
- The mark or grade received in the repeated or substitute course shall be entered on the student's permanent record and count toward his/her accumulative point-hour average and credit hours toward graduation. The original course and mark shall remain on the student's permanent record but will not count in the cumulative point-hour ratio or credit hours toward graduation.
- Courses repeated or substituted according to this rule shall be completed no later than the end of the quarter during which the student will have accumulated a total of 90 credit hours.

An undergraduate student who has received a mark of D+, D or E for courses taken during the first or freshman year at this University may repeat the course as provided in Rule 35.11. Otherwise a student who has received a mark of E or Non-Pass in any other course at this University may repeat the course for credit at his/her option.

An undergraduate student (other than a freshman) or a professional student, as defined in Rule 41.03, who has received a

mark of D+ or D in a course at this University may repeat the course for credit only upon the recommendation of the authorized representative of the Dean or Director of his/her enrollment unit. A graduate student, as defined in Rule 41.03, may, when approval is given by his/her adviser, repeat for credit any course in which he/she has received a mark of D+ or D.

An undergraduate or professional student, as defined in Rule 41.03, who has received a mark of A, A-, B+, B, B-, C+, C, C-, or Pass in a course at this University or elsewhere may repeat the course only as an auditor, upon receipt of permission by the Chairperson of the Department and the authorized representative of the Dean or Director of the enrollment unit. A graduate student, as defined in Rule 41.03, may, after a period of five years, and when approval is given by the Graduate Committee of his/her Department and the Dean of the Graduate School, repeat for credit a course in which he/she has received a mark of A, A-, B+, B, B-, C+, C or C-.

Failure in a Required Course

Except for an undergraduate student who has received a mark of E for courses taken during the first or freshman year, an undergraduate or professional student who has not been dismissed from the University must repeat in class, at the first opportunity, a required course which was failed, unless a substitute course is approved by the authorized representative of the Dean or Director of the enrollment unit upon the recommendation of the Chairperson of the Department or of the Director of the School involved. A graduate student who has not been dismissed from the University must repeat in class a required course which was failed only if required to do so by the adviser.

Withdrawal from Courses or from the University

- Withdrawal from the University during a quarter constitutes withdrawal from all courses in which a student is enrolled during that quarter.

- To withdraw from any or all courses, a student must file the appropriate form with the authorized representative of the Dean or Director of the student's enrollment unit.

- Until 5:00 p.m. of the fourth Friday of a quarter (third Friday of the relevant term for Summer term courses) a student may withdraw from any or all courses which began in the same quarter (or term), and no mark will be entered on the student's official permanent record.

- After 5:00 p.m. of the fourth Friday of a quarter and until 5:00 p.m. of the seventh Friday of a quarter, if a student withdraws from any or all courses which began in the same quarter, the Director of Student Records is authorized to enter the mark W on the student's official permanent record for the courses withdrawn.

- After 5 p.m. of the seventh Friday of the quarter (or the third Friday of the relevant term for Summer term courses), a student who because of circumstances beyond his/her control finds it necessary to withdraw from any or all courses, must file the appropriate petition with the authorized representative of the Dean or Director of the enrollment unit. Reasons not acceptable include (but are not limited to) the student's performance in the course(s), lack of preparation for the course(s), or dissatisfaction with the subject matter offered in the course(s). If the petition is approved, a copy will be filed with the Director of Student Records who is then authorized to enter the mark W on the student's official permanent record and the instructor(s) of the course(s) will be so notified. If the petition is not approved, the student continues to be enrolled in the course(s) and a final mark must be submitted by the instructor(s).

- Withdrawal from any or all courses shall not be permitted after the last day of regularly scheduled classes, that is, after the beginning of the period scheduled by the University for final examinations.

- A student who stops attending a course (or courses) and does not officially withdraw from it (them) shall have the appropriate mark as submitted by the instructor entered on the student's official permanent record for the course(s). Such a mark shall be based on the grading

criteria used to evaluate all students in the course.

- Graduate professional colleges shall formulate rules to govern withdrawal of their students from courses in their respective curricula, subject to the approval of the Council on Academic Affairs, and publish these rules in their respective bulletins.

- For provision regarding return of fees, when applicable, see Rule 43.09. (Rule 37.15)

Point-Hour Ratio

A student's academic standing for a quarter is expressed by the point-hour ratio. This ratio is found by dividing the total number of points earned by the total number of credit hours scheduled or undertaken. Courses in which the marks EM, I, K, NP, P, PA, R, S, U, or W are given are not included in the computations. Courses in which the marks A, A-, B+, B, B-, C+, C, C-, D+, D, or E are given are computed according to the scale: A=4.0, A-=3.7, B+=3.3, B=3.0, B-=2.7, C+=2.3, C=2.0, C-=1.7, D+=1.3, D=1.0, and E=0.0. The following example shows how a point-hour ratio is determined.

	HOURS	GRADE	POINTS
Course No. 1	5	A	20.0
Course No. 2	3	C+	6.9
Course No. 3	(3)	I	
Course No. 4	3	E	0.0
Course No. 5	(3)	PA	
	11		26.9

Point-hour ratio: 2.44

When the final grade on Course No. 3 is recorded, the points and hours will be included in the computation of the student's point-hour ratio. When a student has a record for two or more quarters, he/she will have a cumulative point-hour ratio determined by dividing the total points earned by the total hours undertaken.

The point-hour ratio begins anew when student enrolls in the professional divisions, schools, or colleges of Allied Medical Professions, Dentistry, Education-Professional, Law, Medicine, Nursing, Optometry, Pharmacy,

Veterinary Medicine, and the Agricultural Technical Institute.

University Class Ranking System

Student rank in all the undergraduate colleges is based on total credit hours completed and recorded.

Rank	Credit Hours Earned	Code
Freshman	0 through 44	1
Sophomore	45 through 89	2
Junior	90 through 134	3
Senior	135 and up	4

Rank begins anew when student enrolls in the professional divisions, schools, or colleges of Allied Medical Professions, Dentistry, Education-Professional, Law, Medicine, Nursing, Optometry, Pharmacy, Veterinary Medicine, and the Agricultural Technical Institute.

Students enrolled in the Graduate School receive the rank of either M-Master's (0-50 earned hours) or P-Ph.D. (51 or more earned hours or master's degree).

Should there be any doubt concerning the correctness of one's rank in the professional divisions, or colleges, the student should consult with the division, school or college concerned.

Minimum Scholastic Requirements Warning, Probation and Dismissal

These requirements shall apply only to undergraduate students. The academic standards controlling warning, probation, and dismissal of professional and graduate students shall be established by rule by the faculties of the colleges in which the professional students are registered, or of the Graduate School if the student is a graduate student; provided, however, that an undergraduate professional student shall not be dismissed from the University unless he/she has 15 or more deficiency points and computed on the basis of the entire undergraduate program.

A transfer student from another university who is admitted to advanced standing in this University shall have the point-hour ratio and deficiency points computed only upon work done at this University.

In order to be in good academic standing at this University, a student must carry a cumulative point-hour ratio of 2.00 or better. A student whose point-hour ratio is less than 2.00 will be subject to warning, probation, or dismissal based upon his/her previous record and the number of deficiency points he/she possesses.

Deficiency points are applied only to the record of students whose point-hour ratio is below 2.00 and are defined as the number of points a student would need in order to raise his/her cumulative point-hour ratio to 2.00. (See previous section on point-hour ratio.) A student with a point-hour ratio greater than 2.00 is said to have no deficiency points.

Deficiency points may be calculated by subtracting the number of points earned from twice the number of credit hours attempted for the grades A, A-, B+, B, B-, C+, C, C-, D+, D or E.

A student who has accumulated fewer than fifteen deficiency points will be warned by the college office that he/she is in academic difficulty.

A student who has 15 or more deficiency points is subject to academic dismissal from the University or to probation. A student will be placed on probation after the first quarter in which he/she accumulates 15 or more deficiency points; and the college in which he/she is registered will indicate what conditions must be met in order to continue to enroll at the University. At the end of each succeeding quarter the college will review the record and will take appropriate action to restore him/her to good standing, to place him/her on warning, continue him/her on probation, or dismiss him/her as the acts of the case may dictate. A student who has been dismissed will not be permitted to enroll for any courses at the University until he/she has been reinstated by the college or school.

If at any time the preparation, progress, or success of a student in assigned work is determined to be unsatisfactory, the executive committee of the college or school in which he/she is registered shall be empowered to place him/her on probation.

Notice of dismissal or probation from the University shall be sent by the dean of the

college or school in which the student is registered, to the student.

A student who is dismissed from the University may petition the college or school for later reinstatement in the University. Policies regarding reinstatement are developed by each college or school. A student who is reinstated following an academic dismissal shall be subject to any special requirements which may be determined appropriate by the executive committee of the college.

Graduation Requirements

Requirements for an Undergraduate Degree

To obtain an undergraduate degree from this University an undergraduate student must:

- Have been enrolled in the college, the Colleges of the Arts and Sciences, or the school recommending that degree during the last two quarters of work necessary to complete the degree requirements. The executive committee of the college, the Colleges of the Arts and Sciences, or the school recommending the degree may waive this requirement to the extent of not more than one quarter's enrollment if the student has six quarters in full-time residence (to be in full-time residence in any quarter a student must be enrolled in courses carrying twelve or more quarter hours credit) at this University, including a minimum of forty-five quarter credit hours earned through regular course enrollment at this University during the junior and senior years.
- Have earned through regular course enrollment a minimum of forty-five quarter hours credit from this University.
- Have satisfactorily completed the number of credit hours required for the curriculum he/she is pursuing. The minimum number of credit hours required in each curriculum shall include the credit hours required under Rules 31.0701,

31.0703, and 31.0704; however, excuses granted under Rule 31.0705 shall not reduce the stated minimum number of credit hours required in the curriculum for a degree or a certificate. Credit hours are considered as "satisfactorily completed" only if the student has received, at this University the mark A, A-, B+, B, B-, C+, C, C-, D+, D, EM, K, PA or S in those hours (Rule 35.07).

- Have earned credit points (Rule 37.03) totaling at least twice the number of credit hours attempted at this University for which calculable grades (A, A-, B+, B, B-, C+, C, C-, D+, D, or E) were given.
- Have satisfactorily met all additional college and curricular requirements for the degree involved.
- Have filed an application for the degree in accordance with rules prescribed by the college or school.
- Waiver of any part of this rule (49.03) in the case of individual students may be made only by the Council on Academic Affairs following prior approval by the executive committee of the college. The Provost shall transmit all affirmative actions of the Council on Academic Affairs under this section to the secretary of the student's college and to the Office of Records for notation on the student's permanent record. (Rule 49.03.)

Requirements for a Graduate or Professional Degree

To obtain a graduate or professional degree from this University, the graduate or professional student must have met the minimum requirements established by the graduate council or the college recommending the degree and approved by the Board of Trustees. (Rules 49.05 and 49.07.)

Degrees and Certificates

Degrees and certificates are awarded by the Board of Trustees upon the recommendation of the college or school faculties, or the Graduate Council, and the University Senate, as transmitted to the Board by the President.

College Requirements

Each college has certain requirements which must be met by every student seeking to earn a degree in that college. The specific course requirements for the curricula administered by a given college can be found in the bulletin for that college. In addition to these, the University has established certain requirements outlined below.

University Required Courses

Curricular Requirements

Every undergraduate curriculum must provide for a minimum of 12 hours of free electives. (Rule 31.0701.)

Basic Education

Every undergraduate student must complete 45 hours selected to ensure acquaintance with the three basic areas of academic study: the humanities, the social sciences, and the natural sciences. A minimum of 15 hours is required in each of the three areas. (Rule 31.0703).

The objectives of this part of the curriculum, as set forth by the University faculty, are as follows.

Humanities: The objectives are to introduce the student to his/her possibilities for continuing growth as a thoughtful and reasoning person, sensitive to the aspirations and attainments of others; to acquaint him/her to at least some degree with the treasures of human thought and expression at his/her command; and to develop a continuing desire to have his/her full share of the legacy of all creative efforts.

Natural Sciences: The objectives are to acquaint the student with the kinds of problems which lend themselves to possible solutions through the use of science; to introduce him/her to different scientific techniques through significant illustrative experiences; to give him/her a sense of perspective in the development of science; and to develop in him/her an understanding of the basic community of all scientific disciplines.

Social Sciences: The objectives are to ensure that the student has a basic

understanding of the fundamental ideas upon which our society has been built, the social institutions through which these ideas have been given effective meaning, and the never-ending process of development through free choices limited only by concern for the rights and well-being of others. Emphasis is put upon the values of a free society and the responsibility of the individual for participating actively in the issues and decisions of the day.

Because the courses acceptable for meeting the University Basic Education Requirement are not the same in every undergraduate college, students should check carefully the requirements of the curriculum they expect to follow.

Physical Education

Every undergraduate student, unless excused under Rule 31.0705, shall be required to schedule and complete one or more hours of specified physical education per quarter for a total of three quarters. (Rule 31.0704)

Excuses from Required Courses

The college in which a student is enrolled may excuse a student from course requirements imposed by that college.

Transfer within the University shall not excuse a student from the physical education requirement. The President shall determine University policy with respect to excuse from this requirement of students transferring with advanced standing from other institutions or from branches of this University. In addition, the School of Health, Physical Education and Recreation may excuse individual students from any part or all of the physical education requirement. (Rule 31.0705)

Retroactive Graduate Credit

Students registered in an undergraduate college, the Division of Continuing Education, or a professional college cannot receive graduate credit for courses taken when the student is not enrolled in the Graduate School. (See the following for exceptions.)

Graduate Credit for Undergraduates

An undergraduate student with graduate student potential who does not need to register full-time in order to complete the baccalaureate degree may petition to take certain courses for graduate credit, provided that:

- The credit for the course is not needed to meet the baccalaureate degree requirements.
- The cumulative point-hour ratio is 3.0 or above.
- He/She secures permission before registering for the course from: the instructor in charge of the course; the authorized representative of the Dean; the chairperson of the graduate committee of the department in which the courses are to be taken; the Graduate School.

The senior petition form for obtaining the necessary approvals is available in the Graduate School Office.

He/She must achieve a grade of B or better in such courses in order to obtain graduate credit. A student cannot use these courses for graduate credit until he/she is admitted to and registered in the Graduate School and until the department in which he/she wishes to specialize accepts the work for graduate credit. Not more than 15 quarter hours of such work may be counted toward the student's advanced degree.



University Classification and Course Numbering System

Established 1967-68 (revised 1974-75), the system of numbering courses offered by the University is as follows:

000-099	Non-credit courses (except certain seminars and colloquia) for orientation, remedial, or other noncollege-level experiences. These are courses with credit added to graduation requirements.
100-199	Basic courses providing undergraduate credit, but not to be counted on a major or field of specialization in any department. Courses at this level are beginning courses, required or elective courses that may be prerequisite to other courses.
200-299	Basic courses providing undergraduate credit and may be counted on a major or field of specialization.
300-499	Intermediate courses providing undergraduate or basic professional credit that may be counted on a major or field of specialization.
500-599*	Intermediate courses providing undergraduate or professional credit that may be counted on a major or field of specialization, and may provide graduate credit only in other departments.
600-699*	Courses providing undergraduate or professional credit that may be counted on a major or field of specialization, and may provide graduate credit (in all departments).
700-799*	Advanced courses providing undergraduate, graduate, or professional credit.
800-999*	Courses providing graduate credit and are open to undergraduates only with the consent of the Vice Provost for Research and Dean of the Graduate School.

* Courses for which graduate credit is anticipated must be taught by a member of the faculty approved by the Graduate Committee of the department offering the course. 800 and 900 level courses must be taught by members of the graduate faculty.

Courses of Instruction

Courses numbered below 200 are primarily designed for freshmen and sophomores and do not carry credit for graduate students. Courses numbered from 300 through 499 are not open to freshmen and do not carry credit for graduate students. Courses numbered from 500 through 799 are designed for upperclassmen and graduate students and are not open to freshmen or sophomores, except with the consent of the Vice Provost for Research and Dean of the Graduate School. Courses numbered 800 and above are designed for graduate students and are open to undergraduates only with the consent of the Vice Provost for Research and Dean of the Graduate School.

The following pages describe courses of instruction offered by the University. These descriptions are accurate as of June 8, 1977. Courses and programs are continually being improved, but Bulletin

deadlines preclude the insertion of more recent changes. **The most current information regarding new courses, changes to existing courses, credit hours, sections, days, times, buildings, room and instructors may be found in the quarterly Master Schedule of Classes.**

A sample course listing is provided below.

- A 444†* Principles of Animal Nutrition U 5**
- B** A study of fundamental principles of nutrition in mammals and birds.
- Su (1st term), Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. H444 (honors) may be available to students enrolled in an honors program.
- C** Prereq: Chem 102 or 122 and Math 148 or equiv. Not open to students with credit for Animal Sc 444 or Pltry Sc 444. Open only to majors in animal nutrition. Repeatable to a maximum of 10 cr hrs; subdivisions not repeatable. Cross-listed in Animl Sc and Pltry Sc.
- D** 444.01 Principles of Animal Nutrition I
444.02 Principles of Animal Nutrition II

Explanation of Course Listings

A Course Number: 444

A dagger (†) denotes that the course will not be offered this year. An asterisk (*) indicates that the course is offered every other year.

Course Title: Principles of Animal Nutrition

Instructional Level: U

U = Undergraduate

UG = Advanced undergraduate and graduate

G = Graduate

P = Professional

Credit Hours: 5

B Course Description: A study of fundamental principles of nutrition in mammals and birds.

C Quarters of Offering: Su (1st term), Au, Wi, Sp.

Su = Summer

Au = Autumn

Wi = Winter

Sp = Spring

Classroom and Laboratory Hours: 4 cl, 1 2-hr lab.

Course credit is earned through satisfactory completion of course work which may involve classroom, laboratory, bio-learning center, computer assisted instruction or field trip attendance.

Honors Statement: H444 (honors) may be available to students enrolled in an honors program.

Prerequisite(s): Chem 102 or 122 and Math 148 or equiv.

The course number(s) or other information indicates the preparation or classification required to enroll in the course. If no department name is listed, the number(s) refers to the specific course within the same department. If a class standing (freshmen, sophomore, junior, senior) is listed, only students with that or higher class level are eligible for enrollment. The department, school, or college office should be consulted in cases of question of eligibility to take a course.

Additional Information Affecting Enrollment: Not open to students with credit for Animl Sc or Pltry Sci 444. Open only to majors in animal nutrition.

Repeatability Clause: Repeatable to a maximum of 10 cr hrs; subdivisions not repeatable.

Indicates the maximum number of hours a course may be repeated for credit.

General Information Clause: Cross-listed in Animl Sc and Pltry Sc (meaning this same 444 is also listed in these two academic areas).

Gives general information about the course.

- D Decimal Subdivisions:** 444.01 Principles of Animal Nutrition I
444.02 Principles of Animal Nutrition II

The decimal numbers are subdivisions of the generic number (444). These subdivisions may also carry the information described in A, B, and C. When registering for a course with decimals, the desired subdivision must be used rather than the generic number.



sp/ Principles

Accounting

Office: 452 Hagerty Hall, 1775 College Road, 422-9368

201 Outline of Accounting U 5

Introduction to accounting in modern business; topics include financial statement development, interpretation and analysis in various decision-making contexts.

Au, Sp Qtrs. 5 cl. Not open to students with credit for 211 or equiv. Intended for students whose major is in fields other than business.

211 Introduction to Accounting U 5

The uses of accounting reports for business entities; focus on the uses of accounting for external reporting, emphasizing accounting as a provider of financial information.

Su, Au, Wi, Sp Qtrs. 5 cl. H211 (honors) may be available to students enrolled in an honors program or by permission of faculty. Prereq or concur: Econ 200 or 201 or equiv. Not open to students with credit for 201 or equiv.

212 Introduction to Accounting U 5

The uses of accounting reports in management decisions and in control of business operations.

Su, Au, Wi, Sp Qtrs. 5 cl. H212 (honors) may be available to students enrolled in an honors program or by permission of faculty. Prereq: 211 or equiv; and Econ 200 or 201 or equiv. Not open to students with credit for 201 or equiv.

221 Accounting Methods U 5

Application of accounting techniques and theory to recording and reporting of financial data; emphasis on collection, summarization, and reporting of data in accordance with generally accepted accounting principles.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 212 or equiv.

415† Factory Costs U 5

Survey of industrial cost accounting for the student whose major interest is in fields other than accounting.

5 cl. Prereq: 212 or equiv. Not open to majors in acctg.

493 Individual Studies U 1-10

Individual study projects in selected areas in accounting.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

494 Group Studies U 1-10

Group study projects in selected areas in accounting.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

523 Financial Accounting I U G 5

Principles and procedures of accounting for the assets, liabilities, and shareholder equity of an incorporated business.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 221 or equiv. Not for graduate credit for majors in acctg.

524 Financial Accounting II U G 4

A continuation of 523 with special emphasis on the accounting entity, business combinations and current accounting controversies.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 523 or equiv.

525 Cost Accounting U G 5

Basic concepts and techniques of industrial accounting; historical and standard costs; budgeting; management use of cost accounting information.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 221 or equiv. Not open to students with credit for 415 or equiv. Not for graduate credit for majors in acctg.

535 Advanced Cost Accounting U G 4

Advanced study of selected applications of cost accounting concepts to management problems involving performance measure with emphasis on budgetary control and standard costing.

Sp Qtr. 4 cl. Prereq: 525 or equiv.

626 Tax Accounting I U G 4

Fundamentals of federal, state, and local taxation, with major emphasis upon the federal income tax provisions having common application to all types of taxpayers.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 201 or 212 or equiv.

627 Auditing Principles and Procedures U G 5

Basic concepts and standards of auditing; audit procedures and working papers; internal and external audit reports.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 524 and 525 or equiv.

628† Accounting Practice U G 4

A study of the accounting concepts and standards underlying corporate and non-corporate financial statements, including consideration of typical accounting problems.

4 cl. Prereq: 524 and 525 or equiv.

631 Computer Accounting in Business U G 5

The design, programming, and auditing of computer based accounting information processing systems.

Su, Au, Wi, Sp Qtrs. 3 1½-hr cl. Prereq: 221 and CIS 211.

636† Tax Accounting II U G 3

Advanced study of complex problem areas in taxation confronting the professional tax advisor, emphasizing the structure of tax provisions and opportunities for planning and control.

3 cl. Prereq: 221 and 626 or equiv.

689† Field Work in Accounting U G 15

Open only to students who hold internships with public accounting firms or with industrial concerns, for which advance approval has been given by the faculty. 15 cr hrs and one qtr of residence added to graduation requirements for students in this course.

693 Individual Studies U G 2-5

Individual reports on selected accounting problems in the following fields of accounting; registration for this course number to be followed by the letter designating the field of study.

- a—Auditing
- b—Budgeting
- c—Cost Accounting
- d—Systems
- f—Taxes
- g—Theory

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

694 Group Studies U G 2-5

Registration to be followed by the letter designating the field of study.

- a—Auditing
- b—Budgeting
- c—Cost Accounting
- d—Systems
- f—Taxes
- g—Theory

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

711 Introduction of Management Accounting U G 5

A survey of accounting principles from the viewpoint of management; income measurement; analysis and interpretation of accounting data, internal reports.

Au, Wi, Sp Qtrs. 3 cl and conf. Prereq: Math 131 or equiv and grad standing or approval of graduate business programs office.

712† Introduction to Management Accounting U G 3

Continuation of 711.

3 cl and conf. Prereq: Approval of the Office of Graduate Business Programs.

811 Business Controls G 3

Examination of business planning and the controls over operations and property; the use of accounting data in the management enterprise.

Su, Au, Wi, Sp Qtrs. Prereq: 711 or equiv; and Bus Mgt 801.01. Not for graduate credit for majors in accting.

831 Accounting Systems G 3

The principles underlying the design and installation of accounting systems.

Sp Qtr. 3 cl. Prereq: 811 or written permission of instructor.

844 Financial Accounting Theory G 3

Intensive study of theories of income measurement and asset valuation.

Sp Qtr. 2 1½-hr cl. Prereq: 524 or written permission of instructor.

845† Controllership G 3

The accounting executive's role in the management of an enterprise; accounting data for planning, coordination, control, and protection.

3 cl. Prereq: 811 or written permission of instructor.

846 Advanced Tax Accounting G 4

Tax alternatives and tax planning; tax research; postfiling problems and procedures.

Wi Qtr. 3 cl. Prereq: 626 or equiv.

847 Advanced Auditing G 5

Growth of the auditor's liability and its effects on auditing procedures; advanced auditing problems; discussion of current material affecting the auditing profession.

Sp Qtr. 3 cl. Prereq: 627 or equiv.

851† Accounting Problems of Financial Institutions and Fiduciaries G 3

Accounting principles and problems peculiar to banks, insurance companies, brokerage and investment houses, receivers, executors, and trustees.

3 cl. Prereq: 30 cr hrs in accting or equiv.

852† Governmental Accounting G 3

The application of accounting principles to government; problems relating to funds,

appropriations, and allotments.

3 cl. Prereq: 30 cr hrs in accting or equiv.

853† Accounting Policies of Regulatory Agencies G 3

Accounting policies of the Federal Power Commission, Federal Communications Commission, Securities and Exchange Commission, and Ohio Public Utilities Commission.

3 cl. Prereq: 30 cr hrs in accting or equiv.

854 Accounting Aspects of Business Policy Determination G 3

Case studies with particular attention to accounting analysis and application thereof to business problems.

Au Qtr. 3 cl. Prereq: 811 or written permission of instructor.

861 Seminar in Accounting G 3

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 9 cr hrs.

998 Research in Accounting: Thesis G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

999 Research in Accounting: Dissertation G Arr

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Administrative Science

Office: 126 Hagerty Hall, 1775 College Road, 422-2715

H101 Business and Society U 3-5

A critical examination of the socioeconomic framework of business; seminar discussion of selected readings.

Au, Wi, Sp Qtrs. 3-5 cl. Prereq: Fresh or soph standing, and approved application for Administrative Science Honors Program. Repeatable to a maximum of 15 cr hrs.

301 College Seminar U 1-5

Su, Au, Wi, Sp Qtrs. 2-5 cl. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

501 Business Career Planning U 1

Discussion of business careers, employment trends in business, and conducting an effective employment campaign through resumes, cover letters, and interview techniques. Sewell and Decker.

Au, Sp Qtrs. 1 cl. Prereq: Jr or sr standing.

801 College Seminar: Master's Level G 1-3

Su, Au, Wi, Sp Qtrs. 1-3 cl. Prereq: Permission of instructor.

901 College Seminar: PhD Level G 1-3

Su, Au, Wi, Sp Qtrs. 1-3 cl. Prereq: Permission of instructor.

Aeronautical and Astronautical Engineering

Office: 328 Civil and Aeronautical Engineering Building, 2036 Neil Avenue, 422-2691

200 Elements of Aeronautics and Astronautics U 4

An introduction to the aerodynamics, propulsion, structural design, stability, and control of flight vehicles; emphasis on the mechanics of fluids. Au Qtr. 3 cl, 1 2-hr lab. Prereq or concur: Math 152 and Physics 131.

201 Elements of Aeronautics and Astronautics U 4

A continuation of 200 with emphasis on aircraft propulsion, flight performance, static stability, and control. Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 200.

202 Elements of Aeronautics and Astronautics U 4

A continuation of 201 with emphasis on the structural loads imposed on flight vehicles and the resulting stresses.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 201 and prereq or concur Eng Mech 210.

410 Introduction to Aircraft Design U 3

Design of aircraft components to specifications, preparation of working drawings, selection of equipment from vendors, materials, fabrication, joining, cost; introduction to computer aided design. Wi Qtr. 3 2-hr labs. Prereq: 539, En Graph 110, 200, Eng Mech 420.

416 Design of Flight Vehicles U 3

Continued design work on vehicle developed in 515. Sp Qtr. 3 2-hr labs. Prereq: 515.

417 Structural Design of Aircraft Sub-Assemblies U 3

Continued design work on vehicle developed in 515. Sp Qtr. 3 2-hr labs. Prereq: 515.

505 Thermodynamics U G 4

Introduction to the properties and behavior of aerodynamic fluids from microscopic and macroscopic points of view.

Au Qtr. 4 cl. Prereq: 201 and Math 415.

510 Aeronautical Laboratory U 4

Laboratory demonstrations and experiments in aerodynamics, aeroelasticity, propulsion, and structures of flight vehicles.

Sp Qtr. 2 cl, 2 3-hr lab. Prereq: 540; concur 550.

515 Preliminary Design of Flight Vehicles U 4

Wi Qtr. 2 cl, 2 3-hr lab. Prereq: 541, 550; concur 520.

520 Flight Vehicle Dynamics U G 4

Introduction to the concept of dynamic stability and to the dynamics of rigid aircraft and satellite vehicles. Wi Qtr. 4 cl. Prereq: 201, 580, and Eng Mech 415.

530 One-Dimensional Gasdynamics U G 4

One dimensional compressible flow including chemical reactions.

Wi Qtr. 4 cl. Prereq: 505.

539 Flight Vehicle Structures I U G 4

Load distributions, temperature distributions, and allowable stresses for flight vehicle structures; derivations of basic equations for analysis of flight vehicle structural components.

Au Qtr. 4 cl. Prereq: 202, Math 415, and Eng Mech 420.

540 Flight Vehicle Structures II U G 4

Stress analysis of flight vehicle structures.

Wi Qtr. 4 cl. Prereq: 539 and Eng Mech 415; concur 580.

541 Structural Design of Flight Vehicle Components U G 4

Design of joints; tension, bending, shear, and compression members; diagonal tension field beams, box beams and pressure structures.

Au Qtr. 2 cl, 2 3-hr labs. Prereq: 540.

550 Principles of Flight Vehicle Propulsion U G 4

Functional characteristics and performance of rocket, ramjet, turbojet, turbo propeller, pulse jet, and hybrid engines.

Sp Qtr. 4 cl. Prereq: 530.

560 Classical Aerodynamics U G 4

Fundamentals of steady incompressible, non-viscous aerodynamic flows with applications to airfoils and finite wings.

Sp Qtr. 4 cl. Prereq: 530.

561 Compressible Aerodynamics U G 4

The fundamentals of the aerodynamics of compressible fluids.

Au Qtr. 4 cl. Prereq: 530, 560, and 580.

565 Elements of Fluid Dynamics U G 4

Mathematical fluid dynamics including sound waves, kinematics, vorticity, boundary layer theory, turbulence; applications to atmospheric fluid dynamics and other interdisciplinary areas.

Au Qtr. Prereq: 505, Math 415 or 255. Not for credit for students majoring in aero eng. Intended for students interested in interdisciplinary areas.

570 Viscous Flow and Heat Transfer U G 4

Fundamentals of viscous flow, laminar and turbulent boundary layers, aerodynamic heating, effects of body forces and accelerating elements of radioactive transfer.

Au Qtr. 4 cl. Prereq: 530.

580 Mathematical Methods in Aeronautical and Astronautical Engineering U G 4

Application of selected topics in mathematics to analysis in the field of aeronautical and astronautical engineering.

Wi Qtr. 4 cl. Prereq: Math 415; prereq or concur Math 416.

612 Aircraft Flight Test Engineering U G 4

A determination of the performance, stability, controllability, and handling qualities of general aviation aircraft through flight tests.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 520, 560 or equiv with permission of instructor.

673 Biological Fluid Mechanics for the Engineer U G 4

Study of pulsatile flows, low Reynolds number flows, turbulence, and separated flow phenomena as they pertain to biological systems and biomedical engineering applications.

Sp Qtr. 4 cl. Prereq: Elec Eng 670 and Math 415; or permission of instructor.

693 Individual Studies in Advanced Aeronautical and Astronautical Engineering U G 2-10

Special studies in aeronautical and astronautical engineering in one or more areas, including aircraft structures, aerodynamics, propulsion, flutter and vibration, and stability and control.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 15 cr hrs.

694 Group Studies in Aeronautical and Astronautical Engineering U G 1-15

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

720* Stability and Control of Flight Vehicles U G 4

Modern methods of system response analysis, root-locus analysis, and Liapunov stability analysis.

Sp Qtr. 4 cl. Prereq: 520.

725 Analytical Dynamics of Astronautics U G 4

Satellite orbit analysis and multi-staging of rockets.

Wi Qtr. 4 cl. Prereq: 520 or Eng Mech 415 or equiv with written permission of instructor.

740* Thermal Stresses in Aircraft and Missiles U G 4

Theory of thermal stresses, aerodynamic heating and structural effects due to heating.

Sp Qtr. 4 cl. Prereq: 540.

745 Aeroelasticity I U G 4

Dynamic loads analysis of elastic flight vehicles subjected to unsteady airloads.

Wi Qtr. 4 cl. Prereq: 540 and 560.

751 Advanced Propulsion U G 4

Characteristics and performance of air breathing flight vehicle power plants and their components (inlets, turbo-machinery, combustors, and expansion nozzles).

Au Qtr. 4 cl. Prereq: 550.

760 Advanced Compressible Flow U G 4

Two-dimensional supersonic flow theories.

Wi Qtr. 4 cl. Prereq: 561 or equiv.

761 Advanced Aerodynamics U G 4

Predictions of pressure distributions, forces, and moments of lifting configurations.

Sp Qtr. 4 cl. Prereq: 760.

765 Fundamentals of Atmospheric Fluid Dynamics U G 4

Advanced level of treatment of basic topics in the dynamics and thermodynamics of atmospheric motion.

Wi Qtr. 4 cl. Prereq: 565 or 570.

767 Selected Problems in Oceanic Circulation U G 4

First course for advanced students interested in the application of fluid mechanical principles to oceanic

circulations.

Au Qtr. 4 cl. Prereq: 570 or permission of instructor.

771 Aerodynamics of Viscous Compressible Flows U G 4

Analysis of laminar and turbulent boundary layers in high speed flows.

Wi Qtr. 4 cl. Prereq: 570.

775 Hypersonic Flows I U G 4

Introduction to the analysis of inviscid hypersonic flow fields.

Wi Qtr. 4 cl. Prereq: 561.

800 Theory of Deformation and Flow G 4

General treatment of the basic principles underlying the mechanics of deformable media from both macroscopic and microscopic points of view. Burggraf, Gatewood, and Li.

Wi Qtr. 4 cl. Prereq: 460, 540, and 570 or equiv. Required of all first yr grad students.

802 Analytical Methods in Engineering I G 4

Advanced methods for solution of partial differential equations with applications to fluid dynamics; topics include Green's functions, method of characteristics, numerical methods, and asymptotic solutions.

Sp Qtr. 4 cl. Prereq: 480, and 561 or equiv.

803 Analytical Methods in Engineering II G 3

Continuation of 802 with emphasis on the solution of singular perturbation problems as they arise in fluid mechanics. Burggraf, Gatewood, Li, and Mallett.

Au Qtr. 3 cl. Prereq: 802.

805 Aerodynamics of Chemically Reacting Fluids G 3

The aerodynamics of one-dimensional compressible flow with chemical reactions and wave propagation. Edse.

Au Qtr. 3 cl. Prereq: 405 or equiv.

810 Flight Vehicle Performance Analysis G 3

Analysis of flight vehicle performance in planetary atmospheres. Gregorek, Lee, and Von Eschen.

Au Qtr. 3 cl. Prereq: 550 and 761.

820 Advanced Flight Vehicle Stability and Control G 3

Advanced studies in: stability of systems, non-linear systems, Liapunov method, dynamics in extra-terrestrial atmospheres, new control methods. Mallett.

Au Qtr. 3 cl. Prereq: 720.

842 Advanced Structures for Flight Vehicles G 3

Advanced analysis and design of aircraft structures and/or structural components including thermal, inelastic, and buckling effects. Bailey and Gatewood.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 540 or equiv. Repeatable to a maximum of 9 cr hrs.

850 Non-Equilibrium Flow Dynamics G 3

Relaxation, dissociation, waves (sound, shock) nozzle flow and design collisional energy transfer in gases. Edse, Li, and Petrie.

Au Qtr. 3 cl. Prereq: 460 or equiv.

851 Advanced Propulsion Problems G 3

Combustion instability, free radicals as energy source, space propulsion problems, noise of exhaust jets, energy conversion, solid propellants, heat transfer in rocket engines and cascade theory. Edse. Au, Wi, Sp Qtrs. 3 cl. Prereq: 751. Repeatable to a maximum of 9 cr hrs.

860 Advanced High Speed Aerodynamics G 3

Supersonic and hypersonic aerodynamics, unsteady aerodynamics, transonic flows, transient wave phenomena, non-equilibrium gasdynamics. Burggraf, Lee, Lin, Petrie, and Von Eschen.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 761. Repeatable to a maximum of 9 cr hrs.

861 Advanced Boundary Layer and Heat Transfer Theory G 4

Advanced topics in the areas of boundary layer and heat transfer phenomena. Burggraf, Lee, and Li.

Wi, Sp Qtrs. 4 cl. Prereq: 771 and 800; or permission of instructor. Repeatable to a maximum of 8 cr hrs.

865 Advanced Viscous Flow Theory G 4

Three-dimensional viscous flow at low and high Reynolds number; stability theory; statistical theories of turbulence. Burggraf, Lee, and Li.

Au Qtr. 4 cl. Prereq: 771 and 800.

868 Molecular Theory of Gas Flows G 3

Molecular theory of flow from the viewpoint of the Boltzmann equation. Burggraf, Edse, Lee and Petrie.

Sp Qtr. 3 cl. Prereq: 405, and 800 or equiv.

870* Aerodynamics of Plasmas G 3

The governing equations of magnetofluid mechanics, similarity laws, and applications to continuum plasma problems of interest in aerodynamics. Petrie.

Wi Qtr. 3 cl. Prereq: 460, and Elec Eng 810 or equiv.

880 Seminar G 1

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Repeatable to a maximum of 15 cr hrs. Required of all grad students in aero eng each qtr.

889 Advanced Topics in Aeronautical and Astronautical Engineering G 2-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 15 cr hrs.

894 Group Studies in Aeronautical and Astronautical Engineering G 1-15

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

999 Research in Aeronautical and Astronautical Engineering G Arr

Research for thesis or dissertation purposes only. Su, Au, Wi, Sp Qtrs.

100 Food, Fiber and Natural Resource Economics U 5

Economic principles applied to production, marketing, and consumption of food, fiber products, and related goods and services; implications for agricultural community, and natural resource management. Adams, Himes, McCormick, Simonds, Taylor and Wessel.

Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for Econ 200.

110 Socio-Economic Systems in Rural America U 5

A study of our rural socio-economic systems, the individual's interaction within these systems, and the impact of societal decisions on resource use and control. Adams, Graham, Hitzhusen, Shaudys, Stout, and Thomas.

Au, Wi, Sp Qtrs. 5 cl. Crosslisted in Rural Soc.

H199 Agricultural Economics in a Changing World U 5

A study of basic economic principles as applied to agricultural production, consumption, and marketing problems in a changing world. McCormick.

Sp Qtr. 5 cl. Prereq: Membership in an honors program or eligibility for membership with permission of instructor. Not open to students with credit for 100 or Econ 200.

250 Computers in Agricultural Decisions U 5

Survey of agricultural problem solving, computing systems fundamentals, and the use of computer systems as aids in agricultural decision making. Taylor.

Au, Wi, Sp Qtrs. 3 cl, 2 1-hr lab/discussion. Prereq: 2nd yr standing.

General Prerequisites for Courses Numbered 300 and 400

Unless otherwise indicated, the prerequisites for 300 and 400-level courses are 90 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-399.

310 Management of Agricultural Firms U 5

Organization and operation of farm and agribusiness firms; economic and management principles in decision making; financial statements, budgeting, firm organization and operation, financial and labor management.

5 cl. Prereq: 100 or equiv.

310.01 Farm Management

Erven, Forster, Lee, and Shaudys.

Au, Wi, Sp Qtrs. Not open to students with credit for 310.02 or 410.

310.02 Agribusiness Firm Management

Hahn and Himes.

Au, Wi, Sp Qtrs. Not open to students with credit for 310.01 or 540.

312 Farm Records and Analysis U 3

Nature and need for farm business records and analysis and interpretation of essential records from farm manager viewpoint; their use in income tax reporting. Erven.

Au, Wi Qtrs. 2 1½-hr cl. Prereq: 100 or equiv.

Agricultural Economics

Office: 103 Agricultural Administration Building, 2120 Fyffe Road, 422-7911

320 Marketing in Agricultural Industries U 5

The study and analysis of the theory of markets and the market processes and institutions important in the agricultural-related sectors of the U.S. economy. R. L. Baker, Cravens, Larson, and Simonds.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 100.

416 Agricultural Finance U 4

Financial management of farms and small agribusiness firms; sources of capital, credit institutions, leasing, capital budgeting, leverage, legal aspects, insurance, and financial markets. Lee and Meyer.

Au, Wi Qtrs. 4 cl. Prereq: 310.01 or 310.02 or equiv.

418 Farm Appraisal U 3

Farm real estate appraisal with emphasis on methods, procedure, and reporting; factors influencing land value and fluctuation in land prices. Lee.

Sp Qtr. 3 cl, 33-hr field trips during qtr. Prereq: 310.01 or 310.02 or equiv.

426 Marketing Dairy Products U 3

A study of the principles of assembling, transporting, selling, pricing, distribution, marketing costs, and margin for dairy products. Jacobson.

Au Qtr. 3 cl. Prereq: 100.

430 World Food Economy: Problems, Prospects and Policies U 3

Topics include current and future world food supply and demand, alternative economic and humanitarian policies for food population problems, role of U.S. in meeting world food needs. Meyer and Rask.

Sp Qtr. 3 cl. Prereq: 100 or Econ 200 or equiv.

489 Internship in Agricultural Economics U 3-5

Supervised experience with an approved firm or organization. Written comprehensive report required.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of major advisor. Repeatable to a maximum of 10 cr hrs.

General Prerequisites for Courses Numbered 500

Unless otherwise indicated, the prerequisites for 500-level courses are 15 cr hrs in courses in the same discipline numbered 200 or higher, or 10 cr hrs in courses numbered 200 or higher in the same discipline, plus 10 cr hrs in courses numbered 200 or higher in specified allied disciplines; or baccalaureate degree.

502 Prices of Farm Products U G 3

Characteristics of agricultural price, movement, measurement, seasonality, cycles, and forecasting, including analysis of price formation elasticity, parity, and other price statistics. Himes.

Wi Qtr. 3 cl.

522 Livestock Marketing U G 5

Selling methods, basis of sale, agencies involved, organization of markets, transportation, financing, marketing costs, prices, when to market, grade differentials, government regulation. Stout.

Wi Qtr. 5 cl. Prereq: 320. Offered in cooperation with Animl Sc.

523 Grain Marketing U G 3

Principles and practices involved in grain and feed marketing and the theory of grain pricing; economics of grain marketing. Sharp.

Au Qtr. 3 cl.

528 Marketing Fruits and Vegetables U G 3

Principles involved in the marketing of fruits and vegetables and the agencies concerned. Cravens.

Sp Qtr. 3 cl. 1 2-day field trip.

530 Agricultural Policy U G 5

Characteristics and problems of agriculture; description and analysis of programs and policies designed to assist agriculture and alternative proposals for the future. Stout and Wessel.

Au, Sp Qtrs. 5 cl. Not open to jrs.

531 Natural Resources Economics U G 3

Economic issues in private and public decisions concerning use and conservation of land and other natural resources. Private interests and public policy in resource planning. P. Thomas and Wayt.

Au, Sp Qtrs. 3 cl. Offered in cooperation with Natural Resources.

532 Development of Rural Economic Systems U G 3

Comparison and analysis of systems, problems and methods of transforming rural structures in less developed and developed countries; implications of international issues for rural development. Wessel.

Wi Qtr. 3 cl.

534 Food Economics U G 3

Economic aspects of the production, distribution, and consumption of foods. Simonds.

Sp Qtr. 3 cl.

H539 U.S. Agricultural Price and Income Policy U G 5

A description, analysis, and evaluation of the United States agricultural price and income programs, past, present, and proposals for the future. McCormick.

Wi Qtr. 5 cl. Prereq: Jr standing and membership in an honors program or eligibility for membership with permission of instructor. Not open to students with credit for 530.

541 Cooperation in Agriculture U G 5

Basic principles of cooperatives including types of organizations, legal aspects, membership relations, financing, organizational and intercooperative problems, and distribution of savings. Ingraham.

Au, Sp Qtrs. 5 cl.

593 Individual Studies U G 2-5

Planning, conducting, and reporting a special problem in agricultural economics to meet the needs of the student.

Su, Au, Wi, Sp Qtrs. H593 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Prereq: Permission of instructor.

Repeatable to a maximum of 15 cr hrs in any combination of decimal subdivisions.

593.01 Agribusiness Management**593.02 Agricultural Marketing****593.03 Agricultural Policy****593.04 Foreign Agricultural Development****593.05 Resource Economics****593.06 Community Resource Development****593.07 Agricultural Economic Theory****593.08 Quantitative Methods and Research Methodology in Agricultural Economics****593.09 Unclassified**

595 Senior Seminar in Agricultural Economics U 1

An analysis of social and economic problems encountered by the college graduate in a dynamic world. McCormick.

Au, Sp Qtrs. 1 cl. Prereq: Sr standing.

General Prerequisites for Courses Numbered 600

Unless otherwise indicated, the prerequisites for 600-level courses are 15 cr hrs in courses in the same discipline numbered 300 or higher, or 10 cr hrs in courses numbered 300 or higher in the same discipline, plus 10 cr hrs in courses numbered 300 or higher in specified allied disciplines.

610 Farm Organization U G 5

Detailed application of production economics, management principles, and decision making techniques to the organization, operation, and administration of farms; farm plans developed. Shaudys.

Sp Qtr. 4 cl, 1 2-hr lab and 1 field trip during qtr. Prereq: 310.01 or 410, 312 or 412; Animl Sc 200, and Agronomy 411 or 412.

620 Agri-Industry Organization and Public Policy U G 4

Analysis of socio-economic performance in agricultural industries, including the study of interrelationships among market structure, firm conduct, public policy, consumer behavior and performance in the private enterprise sector of the agricultural economy. Baumer, Henderson, and Marion.

Sp Qtr. 2 2-hr cl Prereq: 320 and 20 additional cr hrs in the social sciences.

640 Strategy in Agribusiness U G 5

Analysis of important management problems confronting agricultural marketing and farm supply firms, including interpreting and responding to industry and socio-economic trends and change forces. Hahn.

Wi Qtr. 1 1-hr cl, 2 2-hr cl. Prereq: 320 and 416 or equiv.

693 Individual Studies U G 2-5

Planning, conducting, and reporting a special problem in agricultural economics.

Su, Au, Wi, Sp Qtrs. H693 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs in any or a combination of decimal subdivisions.

693.01 Agribusiness Management

693.02 Agricultural Marketing

693.03 Agricultural Policy

693.04 Foreign Agricultural Development

693.05 Resource Economics

693.06 Community Resource Development

693.07 Agricultural Economic Theory

693.08 Quantitative Methods and Research Methodology in Agricultural Economics

693.09 Unclassified

694 Group Studies U G 2-5

Selected topics in agricultural economics to acquaint students with current economic conditions.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

694.01 Agribusiness Management

694.02 Agricultural Marketing

694.03 Agricultural Policy

694.04 Foreign Agricultural Development

694.05 Resource Economics

694.06 Community Resource Development

694.07 Agricultural Economic Theory

694.08 Quantitative Methods and Research Methodology in Agricultural Economics

694.09 Unclassified

695 Seminar in Agricultural Business Management U G 3

Application of business management concepts to agriculture. Ingraham.

Au Qtr. 3 cl.

General Prerequisites for Courses Numbered 700

Unless otherwise indicated, the prerequisites for 700-level courses are 15 cr hrs in courses in the same discipline numbered 400 or higher, plus additional specified course(s) numbered 600 or higher.

705 Economics of Agricultural Production U G 3

A critical consideration of economic principles as they apply to production problems in agriculture. Walker.

Wi Qtr. 3 cl. Prereq: Economics 501 or 705. Not open to students with credit for 805.

716 Advanced Agricultural Finance U G 3

Capital budgeting; trade credit management; inventory models; resource control and financial analysis with applications in farm and agribusiness firms. Lee and Meyer.

Sp Qtr. 3 cl. Prereq: 416 or 516 or Bus-Fin 620.

General Prerequisites for Courses Numbered 800 and 900

Unless otherwise indicated, the prerequisites for 800- and 900-level courses are 30 cr hrs in courses in the same discipline, or 20 cr hrs in the same discipline, plus 25 cr hrs in specified allied disciplines.

800 Research Methods in Agricultural Economics G 3

Principles of scientific method in agricultural economics. Stout.

Sp Qtr. 3 cl. Prereq: Econ 705, 5 cr hrs math, and 4 cr hrs stat.

801 Seminar in Problems in Agricultural Economics Statistics G 3

Application of statistics to problems in agricultural economics. Hushak.

Au Qtr. 3 cl. Prereq: Econ 641.

802 Quantitative Methods in Agricultural Economics G 3

Applications of analytical models to problems in agricultural economics research. Walker.

Wi Qtr. 3 cl. Prereq: 800, Econ 641, and differential calculus.

803 Seminar in Linear Programming G 2

Application of linear programming to agriculture.

Sp Qtr. 2 cl. Prereq: 800.

806 Economics of Agricultural Production G 4

A further consideration of economic principles as they apply to production problems in agriculture. Walker.

Sp Qtr. 3 cl. Prereq: 705 and Econ 805.

807 Theory of Public Choice G 4

Theory of public choice and its application to problems of collective action in agriculture, development, trade, and public services. Hushak.

Wi Qtr. 4 cl. Prereq: Econ 805.

810 Agricultural Firm Management G 3

Examination of the operating and strategy problems confronting the managers of farm and nonfarm agribusiness firms, with emphasis on applying and integrating management concepts. Erven.

Au Qtr. 3 cl. Prereq: Econ 705 and permission of instructor.

820 Marketing Economics in Agriculture G 3

A critical study of contemporary problems in agricultural marketing in the U.S. and world economics with emphasis on the theoretical and policy implications. R. L. Baker, Cravens, Hahn, Henderson, Marion, Sharp, Simonds, and Stout.

Wi Qtr. 3 cl. Prereq: 620, Econ 705 and 706.

830 Agricultural Policy G 4

Examination of values of American society concerning agriculture, reasons for these values, and alternatives for achieving various goals for U.S. agriculture.

Au Qtr. 4 cl. Prereq: 320 or 420, 530, Econ 805, and 806.

831 Resource Economics G 3

Application of economic theory and decision-making frameworks to current issues of resource use, allocation, and control. Hitzhusen and Wayt.

Sp Qtr. 3 cl. Prereq: Econ 705 and 706.

832 Seminar in Economic Development of Foreign Agriculture G 3

Characteristic problems of developing countries, identification and analysis of limiting factors in underdevelopment, and techniques for stimulating economic development through growth in agriculture. Adams.

Sp Qtr. Prereq: Econ 705. Repeatable to a maximum of 8 cr hrs.

899 Interdepartmental Seminars G 1-5

See Interdepartmental Seminars.

Au, Wi, Sp Qtrs.

993 Individual Studies G 2-5

Planning, conducting, and reporting a special problem in agricultural economics fitting the needs of the student, under the guidance of an instructor.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs in any or a combination of decimal subdivisions.

- 993.01 Agribusiness Management
- 993.02 Agricultural Marketing
- 993.03 Agricultural Policy
- 993.04 Foreign Agricultural Development
- 993.05 Resource Economics
- 993.06 Community Resource Development
- 993.07 Agricultural Economic Theory
- 993.08 Quantitative Methods and Research Methodology in Agricultural Economics
- 993.09 Unclassified

995 Seminar G 2-4

Au, Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs.

999 Research in Agricultural Economics G Arr

Research for thesis or dissertation purposes only. Su, Au, Wi, Sp Qtrs.

Agricultural Education

Office: 208 Agricultural Administration Building, 2120 Fyffe Road, 422-6321

200 Introduction to Agricultural Education U 3

Importance and purpose of agricultural education with emphasis on nature of programs, career opportunities, and qualifications of personnel as related to school and society. Boucher.

Au, Wi, Sp Qtrs. 3 cl.

210 Methods in Vocational Agriculture for Special Teachers U 3

Su Qtr. Arr. Prereq: One-year vocational agriculture certificate or eligibility to pursue a program to secure such a certificate.

210.01 Orientation

Orientation to vocational agriculture with emphasis upon purposes and content of such programs in teaching high school and adult students. Knight.

210.02 Teaching

Methods of teaching to promote learning in the classroom and laboratory. Newcomb.

Not open to students with credit for 330.

210.03 Course of Study

Organizing and evaluating courses of study. Guiler.

Not open to students with credit for 621.

210.04 Special Methods

Making effective use of FFA, occupational experience, and community resources in teaching. Guiler.

280 Experience in Agricultural Education U 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of coordinator of field experience. Not open to students with credit for 380. Repeatable to a maximum of 15 cr hrs. Supervised field experience in:

280.01 Vocational Agriculture

Participation in professional activities relating to programs and methods in teaching vocational agriculture. Wilson and Boucher.

280.02 Cooperative Extension

Participation in professional experiences involving Cooperative Extension programs. Young.

280.03 Other Agricultural Education Programs

Participation in programmed experience in agricultural education other than teaching vocational agriculture and cooperative extension.

280.04 Agricultural Occupations

Participation in agricultural employment experiences. O. Miller.

290 Communication of Agricultural Concepts U 3

Procedures and practice in developing, interpreting, and communicating agricultural and natural resources concepts with emphasis upon the use of visual materials and effective presentation. Erpelding and R. Miller.

Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: English 100.

294 Group Studies U 1-5

Group studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

330 Methods in Teaching Vocational Agriculture U 5

An examination of the learning process with emphasis on planning for instruction and the use of teaching skills. Newcomb.

Au, Wi, Sp Qtrs. 5 cl, 2 lab hrs, 1 one-day field trip. Prereq: 200 and 280.01. Not open to students with credit for 230.

410 Instructional Program Planning for Vocational Agriculture U 3

Principles and procedures used in planning and evaluating courses of study with some emphasis upon occupational experience programs for high school students. McCracken.

Wi, Sp Qtrs. 1 2½-hr cl. Prereq: 330 or permission of instructor.

420 Program Development in Cooperative Extension U 3

Principles and procedures in developing extension programs in agriculture and home economics, with emphasis on program determination, teaching methods, and relationships with other groups. Young. Sp Qtr. 3 cl. Prereq: Permission of instructor.

General Prerequisites for Courses Numbered 500

Unless otherwise indicated, the prerequisites for 500-level courses are 15 cr hrs in courses in the same discipline numbered 200 or higher, or 10 cr hrs in courses numbered 200 or higher in the same discipline, plus 10 cr hrs in courses numbered 200 or higher in specified allied disciplines; or baccalaureate degree.

581 Student Teaching in Agriculture U 5

Supervised participation in teaching and other professional responsibilities of teachers of agriculture including clinical analysis in conferences and seminars. Boucher and Wilson.

Au, Wi, Sp Qtrs. Prereq: 330 and completion of departmental requirements for admission to the professional program; concur 582 and 583.

582 Student Teaching in Agriculture U 5

Supervised participation in teaching and other professional responsibilities of teachers of agriculture including clinical analysis in conferences and seminars. Boucher and Wilson.

Au, Wi, Sp Qtrs. Concur: 581 and 583.

583 Student Teaching in Agriculture U 5

Supervised participation in teaching and other professional responsibilities of teachers of agriculture including clinical analysis in conferences and seminars. Boucher and Wilson.

Au, Wi, Sp Qtrs. Concur: 581 and 582.

General Prerequisites for Courses Numbered 600

Unless otherwise indicated, the prerequisites for 600-level courses are 15 cr hrs in courses in the same discipline numbered 300 or higher, or 10 cr hrs in courses numbered 300 or higher in the same discipline; plus 10 cr hrs in courses numbered 300 or higher in specified allied disciplines.

621 Curriculum Development U G 3

Principles and practices used in developing courses of study in agriculture for high school and post-high school programs. Guiler and McCracken.

Su (1st term), Au Qtrs. 3 2-hr cl. Prereq: 581, 582, and 583.

622 Continuing Education in Agriculture U G 3

Principles and practices involved in developing vocational, technical, and extension programs for out-of-school youth and adults. Bender, Boucher, and Newcomb.

Au Qtr. 1 3-hr cl. Prereq: 581, 582, and 583.

631 Methods in Teaching Agriculture U G 3

Theory, principles, and procedures associated with effective instruction in agriculture at the secondary, technical, and college levels. Bender and Newcomb.

Su (1st term), Wi Qtrs. 2 1½-hr cl. Prereq: 581, 582, and 583.

640 Instructional Media in Teaching Agriculture U G 3

Theory and practice in developing and using instructional media and equipment at the secondary, technical, and college levels. Boucher and Guiler.

Su, Sp Qtrs. 1 3-hr cl. Prereq: 581, 582, and 583.

641 Occupational Experience in Agricultural Education U G 3

Principles and procedures used in selecting, planning, conducting, and evaluating occupational experience programs for students. Guiler and McCracken.

Au, Sp Qtrs. 1 3-hr cl. Prereq: 581, 582, and 583.

642 Youth Organizations U G 3

An analysis of youth organizations in vocational and extension education with emphasis on planning and conducting such programs. Bender and Newcomb.

Sp Qtr. 1 3-hr cl. Prereq: 581, 582, and 583.

643 Youth Program Management in Non-School Settings U G 3

Principles, theories and practices involved in conducting, supervising and managing a youth program. Lifer.

Wi Qtr. 3 cl.

644 Camp Program Development U G 3

Principles, theories and practices involved in planning, conducting and evaluating an educational camping program. Bruny.

Wi Qtr. 1-3 hr cl. Prereq: Experience in youth agency work or permission of instructor.

684 Internship in Agricultural Education U G 3-15

Guided participation to further enhance professional and/or technical competency in selected areas.

Su, Au, Wi, Sp Qtrs. Prereq: 581, 582, and 583.

Repeatable to a maximum of 15 cr hrs.

684.10 Vocational Agriculture

684.20 Cooperative Extension Education

684.30 Technical

684.40 Specialized Agriculture

693 Individual Studies U G 2-5

Planning, conducting, and reporting a special study appropriate to the needs of the student.

Su, Au, Wi, Sp Qtrs. H693 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Repeatable to a maximum of 12 cr hrs.

General Prerequisites for Courses Numbered 700

Unless otherwise indicated, the prerequisites for 700-level courses are 15 cr hrs in courses in the same discipline numbered 400 or higher, plus additional specified course(s) numbered 600 or higher.

743 Practicum in Teaching Agricultural Mechanics U G 3

Selection and use of subject matter, resources, and methods of teaching agricultural mechanics. Gleim and Johnson.

Au, Sp Qtrs. 1 4-hr cl. Prereq: 621, 631, or 684.

744 Practicum in Teaching Farm Business Planning U G 3

Methods of teaching farm business planning, including the selection of subject matter and use of resources, with application to high school and continuing education programs. Starling.

Au Qtr. 1 3-hr cl. Prereq: 621, 631, or 684.

770 Evaluation U G 3

Evaluation principles and procedures used in developing vocational, technical, and extension programs. McCracken and Wilson.

Sp Qtr. 1 3-hr cl. Prereq: 621, 631, or 684.

790 Workshops in Agricultural Education U G 3-5

Intensive study of selected areas of agricultural education with emphasis on the application of principles and methods in attaining desired objectives.

Su Qtr. Minimum of 3 wks. Prereq: Teaching or extension experience and permission of instructor. A maximum of 10 cr hrs may be earned in any one decimal subdivision; or 15 cr hrs in any combination of decimal subdivisions.

790.10 General**790.11 Agricultural Production****790.12 Agricultural Business, Supplies, and Services****790.13 Agricultural Equipment and Mechanics****790.14 Agricultural Products and Processing****790.15 Ornamental Horticulture****790.16 Agricultural Resource Conservation****790.17 Forestry****790.20 Cooperating Instructors****790.21 Supervisors****790.22 Technical School Instructors****790.23 Continuing Education Teachers****790.24 Teachers with Special Certificates****790.25 Teachers of Disadvantaged Youth****794 Group Studies U G 3 or 5**

An intensive study of a selected area in agricultural education appropriate to the needs of the group not provided in other courses. Cunningham.

Au, Wi, Sp Qtrs. 1 3-hr cl. Prereq: Teaching or extension experience. Repeatable to a maximum of 10 cr hrs.

795 Seminar U G 1-3

1- or 2-hr cl. Prereq: Written permission of instructor. A maximum of 15 cr hrs may be earned with not more than 6 hours in any one decimal subdivision.

795.01 Contemporary Problems

Au Qtr.

795.02 Problems and Issues

Wi Qtr.

795.03 Leadership Development

Au, Sp Qtrs.

795.04 Program Development

Au Qtr.

795.05 Research and Evaluation

Wi Qtr.

795.06 Communication

Wi Qtr.

General Prerequisites for Courses Numbered 800 and 900

Unless otherwise indicated, the prerequisites for 800 and 900-level courses are 30 cr hrs in courses in the same discipline, or 20 cr hrs in the same discipline, plus 25 cr hrs in specified allied disciplines.

810 Principles of Vocational-Technical Education G 3

An analysis of evolving concepts of vocational and technical education with emphasis upon principles underlying organizations and practice. McCracken.

Au Qtr. 1 3-hr cl. Prereq: Professional experience in vocational education.

811 Administration and Supervision G 3

Principles in developing and administering programs in vocational, technical, and extension education with attention to federal-state-local relationships, in-service education, and supervisory procedures. Cunningham and Starling.

Su (2nd term), Au Qtrs. 1 3-hr cl. Prereq: Experience in agr educ.

812 Teacher Education G 3

Principles and methods of teacher education in agriculture including selection and guidance of students, curriculum, field experience, placement, in-service education, and research. Newcomb.

Au Qtr. 5 cl. Prereq: Experience in agr educ.

823 Program Planning and Development G 3

Principles, theory, and practice in developing state and local programs of vocational, technical, and extension education. Cunningham and McCracken.

Wi Qtr. 1 3-hr cl. Prereq: Experience in agr educ.

885 Research Methods G 3

Principles and techniques of research appropriate for planning, conducting, and reporting research in vocational, technical, and extension education. Warmbrod.

Su (1st term) Qtr, 5 cl; Wi Qtr, 1 3-hr cl. Prereq: 6 cr hrs grad courses.

886 Research Design G 3

Development of effective design for research problems in vocational, technical, and extension education, including theory, models, and sampling. Warmbrod.

Sp Qtr. 2 1½-hr cl. Prereq: 885 and a course in statistics.

887 Analysis and Interpretation of Data G 3

Application and interpretation of descriptive and inferential statistics for research in vocational-technical and extension education, including the use of the computer. Warmbrod.

Au Qtr. 1 2½-hr cl. Prereq: 886 or permission of instructor.

889 Advanced Studies G 3

Individual field study in partial fulfillment of needs for research experience.

Su, Au, Wi, Sp Qtrs. Prereq: 885. Repeatable to a maximum of 9 cr hrs.

899 Interdepartmental Seminar G 1-3

Investigation and analysis of current problems and issues in cooperation with other appropriate departments.

Wi, Sp Qtrs. 1 or 2 cl.

995 Seminar in Research G 1-3

Further development and direction of individual studies and programs of research. Cunningham and Warmbrod.

Su Qtr. 1 3-hr cl. Prereq: 886. Repeatable to a maximum of 3 cr hrs.

999 Research G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Agricultural Engineering

Office: 105 Ives Hall, 2073 Neil Avenue, 422-6131

General Prerequisites for Courses Numbered 200

Unless otherwise indicated, the prerequisites for 200-level courses are 45 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-199.

223 Introduction to Agricultural Engineering Design U 2

Principles of engineering design, emphasizing biological concepts of importance in agricultural production and processing. Holmes.

Au Qtr. 1 3-hr, 1 2-hr lab. Prereq: Physics 132. Open only to agri eng majors.

294 Group Studies U 1-5

Basic studies in agricultural engineering.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

General Prerequisites for Courses Numbered 300 and 400

Unless otherwise indicated, the prerequisites for 300 and 400-level courses are 90 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-399.

425 Engineering Properties of Biological Materials U 3

Identification and measurement of the physical properties of agricultural materials relevant to the engineering of systems for their production, harvesting, handling, and classification. Blaisdell and Herum.

Au Qtr. 2 cl, 1 2-hr lab. Prereq: Chem 204 and Eng Mech 420, or permission of instructor.

433 Analysis of Elementary Biological-Physical Systems U 3

Mathematical model formulation and analysis techniques developed and applied to elementary biological and physical systems. Hamdy.

Wi Qtr. 3 cl, 1 1-hr lab. Prereq: Math 255 and Eng Mech 410; or equiv.

434 Biometeorology of Plant and Animal Systems U 3

Study of the micro- and macro-environmental variables in nature as they relate to engineering of plant and animal production systems. Stombaugh.

Wi Qtr. 3 cl. Prereq: 223.

General Prerequisites for Courses

Numbered 500

Unless otherwise indicated, the prerequisites for 500-level courses are 15 cr hrs in courses in the same discipline numbered 200 or higher, or 10 cr hrs in courses numbered 200 or higher in the same discipline, plus 10 cr hrs in courses numbered 200 or higher in specified allied disciplines; or baccalaureate degree.

535 Utilization of Energy in Agriculture U G 4

Study of motive and stationary power needs of agriculture, mechanics of traction, characteristics of power sources, morphology of off-the-road vehicle design. Huber.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 433 and Mech Eng 501.

543 Engineering Soil-Water Management U G 5

Engineering design of drainage, irrigation, and erosion control systems for optimum crop growth, environment, and related water storage structures. Schwab.

Au Qtr. 3 cl, 2 3-hr lab. Prereq: 434, Agronomy 240 and Civil En 413 or equiv.

544 Engineering Agricultural Machines U G 4

Design of agricultural machines; recognition of the economic, political, and social context in which the machinery is designed, built, distributed, and used. Drew.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 535 and Mech Eng 350.

593 Individual Studies U G 1-5

Advanced study of problems not included in regular courses of this department.

Su, Au, Wi, Sp Qtrs. H593 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Prereq: Permission of instructor.

General Prerequisites for Courses Numbered 600

Unless otherwise indicated, the prerequisites for 600-level courses are 15 cr hrs in the same discipline numbered 300 or higher, or 10 cr hrs in courses numbered 300 or higher in the same discipline, plus 10 cr hrs in courses numbered 300 or higher in specified allied disciplines.

608† Measurement Techniques in Agricultural Engineering U G 3

Principles and techniques for obtaining measurement data in agricultural engineering research and development. Drew.

Wi Qtr. 2 cl, 1 3-hr lab. Prereq: Sr standing in engineering. Not open to students with credit for 808.

645 Environmental Engineering of Agricultural Structures U G 4

Functional requirements and principles involved in housing animals and crops; analysis of factors and properties affecting energy exchanges with the environment. Stombaugh.

Wi Qtr. 4 cl. Prereq: 434, Eng Mech 420, and Mech Eng 510.

646 Engineering Agricultural Processing Systems U G 4

Design of systems for processing agricultural food, feed, and fiber, utilizing principles of biodynamics, transient diffusion, turbulent and non-ideal transport, and particulate handling. Blaisdell and Herum.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 425, 433 and Mech Eng 510.

647 Engineering Agricultural Systems U G 4

Integration of engineering and biological principles in agriculture to optimize complete operational production systems; application of relevant theory to present and future systems. Hamdy.

Sp Qtr. 4 cl. Prereq: 543, 544, 645, 646, and Genetics 650; or equiv.

657* Soil Machine Dynamics in Plant Environment U G 4

Soil dynamics in relation to plant environment and agricultural machine design. Drew.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: Agronomy 240 or 671; Botany 430; and Eng Mech 410 or permission of instructor.

681 Analog Simulation U G 5

Principles of analog and hybrid simulation developed and applied to engineering problems in agricultural systems. Hamdy.

Au Qtr. 3 cl, 2 2-hr lab. Prereq: 433 or equiv.

682 Similitude Theory and Applications U G 3

Similitude theory and applications in engineering and bio-engineering experimental research and development. Nelson.

Au Qtr. 3 cl. Prereq: Sr standing in engineering.

684 Advanced Food Process Engineering U G 3

Application of heat and mass transfer, fluid flow, food properties, and food processing constraints in the design and selection of food process equipment. Blaisdell.

Wi Qtr. 3 cl. Prereq: Ag M&Sys 381, Fd Sc&Nu 541, or permission of instructor. Offered in cooperation with the Department of Food Science and Nutrition.

693 Individual Studies U G 1-5

Work on problems that are not included in regular courses; practice in development, organization, solution, and report on problems of student's choosing.

Su, Au, Wi, Sp Qtrs. Prereq: 15 cr hrs of 300 level or higher agri eng courses and written permission of instructor. Repeatable to a maximum of 10 cr hrs.

694 Group Studies U G 1-5

Advanced studies in agricultural engineering with principal emphasis on design.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

695 Professional Development U G 1

Needs and programs for professional development in engineering related to food and agriculture; opportunities for professional advancement, engineering ethics, and responsibilities to society. Nelson.

Au, Wi Qtrs. 1 2-hr cl. Prereq: 3rd yr standing in agri eng.

General Prerequisites for Courses Numbered 700

Unless otherwise indicated, the prerequisites for 700-level courses are 15 cr hrs in courses in the same discipline numbered 400 or higher, plus additional specified course(s) numbered 600 or higher.

714 Environmental Pollution Abatement U G 5

Problems, philosophies, principles, and methods of pollution abatement in the total environment; quantitative approaches to waste management in air,

water, and land systems.

Wi Qtr. 5 cl. Prereq: Sr or grad majors in engineering or sciences. Not open to students with credit for Civil En 518 or 714, Chem Eng 714, Mech Eng 714, or Metal En 714. Cross-listed in Civil En, Chem Eng, Mech Eng, and Metal En.

750 Design of Waste Management Systems U G 3

Application of bioengineering principles of pollution control in the design of management systems for wastes from food and fiber production, storage, and processing operations. Taiganides and White.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: Sr standing in engineering, or 714, or permission of instructor.

General Prerequisites for Courses Numbered 800 and 900

Unless otherwise indicated, the prerequisites for 800 and 900-level courses are 30 cr hrs in courses in the same discipline, or 20 cr hrs in the same discipline, plus 25 cr hrs in specified allied disciplines.

850 Seminar G 1

Hamdy.

Au, Wi, Sp Qtrs. 1 cl. Repeatable to a maximum of 6 cr hrs.

858* Turbulent Diffusion of Aerosols G 5

Dispersion of particles in turbulence; introduction of statistical theory of turbulence; measurement of fluid flow and turbulence; applications. Brazee.

Au Qtr. 5 cl Prereq: Math 704 and permission of instructor.

877 Drainage Engineering G 3

Principles of water movement to subsurface drains including depth and spacing; frequency analysis of drainage flow; hydrologic characteristics of drainage systems; drainage requirements of crops. Schwab.

Wi Qtr. 3 cl. Prereq: 543 and Math 512.

894 Group Studies G 1-5

Graduate studies in agricultural engineering.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

897 Interdepartmental Seminar in Natural Resources G 1

See under Interdepartmental Seminars.

999 Research G Arr

Research for thesis and dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Agricultural Mechanization and Systems

Office: 105 Ives Hall, 2073 Neil Avenue, 422-6131

110 Engineering in Agriculture U 5

Basic concepts of engineering and technology essential to the development and function of improved systems for fulfilling our food and agricultural environment needs. Holmes.

Au, Wi, Sp Qtrs. 4 cl 1 2-hr lab. Not open to students with credit for 210.

General Prerequisites for Courses Numbered 200

Unless otherwise indicated, the prerequisites for 200-level courses are 45 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-199.

220 Buildings and Equipment for Farmstead Operations U 3

Functional requirements and planning of buildings and facilities for livestock production and for conditioning and storage of crops; environmental control; building construction. Herum.

Au, Sp Qtrs. 2 cl, 2 lab hrs. Prereq: Math 116, or 148 and 149, or 150.

221 Agricultural Materials Handling Systems U 3

Principles, functional analysis and design of agricultural materials handling systems from harvest to utilization. Herum.

Wi Qtr. 2 cl, 2 lab hrs. Prereq: Math 116, or 148 and 149, or 150.

230 Power for Agricultural Operations U 3

A study of power in agriculture with primary emphasis upon power needs for field operations, characteristics of available power sources, selection, and use of power units. Huber.

Au, Wi, Sp Qtrs. 2 cl, 2 labs hrs. Prereq: Math 116, or 148 and 149, or 150.

231 Electric Power for Agricultural Operations U 3

Functional analysis of systems and components essential for distribution and control of electricity for power, heat, and illumination applications in agriculture. Herum.

Wi Qtr. 2 cl, 2 lab hrs. Prereq: Math 116, or 148 and 149, or 150.

232 Small Air-Cooled Engines U 4

Principles of operation, maintenance and repair of small air-cooled engines. Gleim.

Au, Wi Qtrs. 2 cl, 2 2-hr labs. Prereq: Sophomore standing.

240 Fabrication of Metal in Agri-business and Agricultural Applications U 3

Principles and techniques in the fabrication of metal using welding and other processes needed in agricultural and agri-business applications. Johnson.

Au, Wi, Sp Qtrs. 2 cl, 6 lab hrs. Prereq: Sophomore standing.

241 Building Materials and Construction in Agri-business U 3

Principles and techniques in the fabrication of wood, concrete and masonry materials used in agri-business and agricultural applications. Gleim.

Au, Wi, Sp Qtrs. 2 cl, 6 lab hrs. Prereq: Sophomore standing.

250 Machines for Agricultural Operations U 3

Analysis of field machine operations with emphasis on recognition and quantitative solution of problems in selection and use of machines for optimum economic performance. Drew.

Au, Sp Qtrs. 2 cl, 2 lab hrs. Prereq: Math 116, or 148 and 149, or 150.

270 Engineering Methods in Soil and Water Conservation U 3

Instrument surveying, aerial and topographic maps, rainfall and runoff, and engineering applications of

soil and water management on farms and on recreational areas. Bondurant and Schwab.

Au, Sp Qtrs. 2 cl, 3 lab hrs. Prereq: Math 116, or 148 and 149, or 150.

280 Food Machinery U 3

Functional and energy requirements of food processing machines and systems. Alternatives in unit operations. Performance characteristics of process machinery and materials performance criteria. Herum.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: 2nd yr standing.

293 Individual Studies U 1-5

Work on problems not in regular courses; practice in development, organization, solution, and reporting on such problems.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

294 Group Studies U 1-5

Basic studies in agricultural mechanization and systems.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor.

General Prerequisites for Courses Numbered 300 and 400

Unless otherwise indicated, the prerequisites for 300 and 400-level courses are 90 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-399.

305 Rural Housing Technology U 3

Basic technological factors of rural housing; site selection, drainage, water supply, waste disposal, utilities, and basic construction methods. Miller.

Au, Sp Qtrs. 3 cl. Prereq: 3rd yr standing or permission of instructor.

381 Introduction to Food Process Engineering U 4

Introduction to engineering operations in food processing, including heat transfer, fluid flow, mixing, separating, moisture content modification, and size reduction. Herum.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: Math 151 and Physics 112 or Ag M&Sys 280. Offered in cooperation with Food Science and Nutrition.

General Prerequisites for Courses Numbered 500

Unless otherwise indicated, the prerequisites for 500-level courses are 15 cr hrs in courses in the same discipline numbered 200 or higher, or 10 cr hrs in courses numbered 200 or higher in the same discipline, plus 10 cr hrs in courses numbered 200 or higher in specified allied disciplines; or baccalaureate degree.

500 Farm and Home Safety U G 1

Causes of accidents; methods for conducting farm and home safety programs; for students interested in vocational agriculture, extension, and farm organizational work.

Sp Qtr. 1 cl.

550 Pollution Control and Waste Utilization U G 3

Management and utilization of animal wastes, fertilizers, pesticides, crop residues, milk and food processing and farmstead and urban solid wastes to abate environmental pollution at the urban-rural interface. Taiganides.

Su, Wi, Sp Qtrs. 3 cl. Prereq: Upper division or grad standing. Not open for grad cr to students majoring in agri eng.

551 Advanced Farm Power and Field Machinery U G 3

An advanced study of harvesting machines and power units from the mechanical, operational, and economic standpoint; emphasis is given to the development of optimum harvest systems.

Au Qtr. 2 cl, 1 3-hr lab. Prereq: 9 cr hrs Ag M&Sys, 8 cr hrs agronomy, or baccalaureate degree.

552 Agricultural Pesticide Equipment U 3

Equipment and physical techniques for applying chemicals used in plant disease, insect and weed control. Basic physical principles and calibration of equipment. Drew.

Au, Wi Qtrs. 2 cl, 2 hrs lab. Prereq: Sr or grad standing.

570 Agricultural and Forest Hydrology U G 3

Hydrology of small watersheds as influenced by watershed management practices; water resource development; control of sediment and floods; and water quality conservation. Bondurant and Schwab.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 3rd yr standing; Math 116, or 148 and 149, or 150. Not open for credit to students majoring in agri eng.

583 Food Process Controls and Instrumentation U G 3

Concepts, characteristics and uses of instrumentation and controls in food industries; controller selection, calibration, and adjustment for food processes. Blaisdell and Drew.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: 381 or permission of instructor. Offered in cooperation with Food Science and Nutrition.

591 Workshop U G 3

Principles, objectives, methods, and equipment in the organization and management of a program for teaching agricultural mechanics; students will plan, present, and evaluate units of instruction. Johnson.

Su (1st term) Qtr. First 3 wks—half time. Prereq: 9 cr hrs Ag M&Sys and permission of instructor.

a—Agricultural Mechanics. Johnson.

693 Individual Studies U G 1-5

Problems not included in regular courses; practice in development, organization, solution and reporting on such problems.

Su, Au, Wi, Sp Qtrs. Prereq: 15 cr hrs of 300-level or above in ag m&sys courses and written permission of instructor. Repeatable to a maximum of 10 cr hrs.

694 Group Studies U G 1-5

Advanced studies in agricultural mechanization and systems.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor.

Agriculture

Office: 100 Agricultural Administration Building, 2120 Fyffe Road, 422-6891

101 Agriculture College Orientation U 1

Orientation to the University and college; exploration of curricula, opportunities, and services. Ritchie.

Au Qtr. 1 cl. Not open to students with credit for Univ Col 100.

General Prerequisites for Courses Numbered 300 and 400

Unless otherwise indicated, the prerequisites for 300 and 400-level courses are 90 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-399.

351 Agricultural Employment U 1

Discussion conducted by outside speakers and instructor related to career opportunities, recruitment-placement techniques, interviews, job offer evaluations, and transition from campus. Darrow.

Au, Wi Qtrs. 1 cl.

H590 Agriculture Honors Colloquium U 2

The relationships of technology, science, and economics in agriculture to society; discussions are led by faculty members or outside speakers. Ritchie.

Au, Wi, Sp Qtrs. 2 cl. Prereq: Enrollment in agriculture honors program. Repeatable to a maximum of 4 cr hrs.

595 Seminar U 2-5

Current topics of general interest to undergraduate students in agriculture, home economics, and natural resources. Reisch.

Wi Qtr. Arr. H595 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Prereq: Jr or sr standing in the college and written permission of instructor. Repeatable to a maximum of 10 cr hrs.

695 Seminar U G 2-5

The underlying philosophy and principles for developing, organizing, and administering land-grant type institutions and related agencies of agriculture, home economics, and natural resources. Smith and Parsons.

Su, Wi Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

698 International Study Tour U 3-15

Study and observation of agriculture, home economics, and natural resources, including meetings and discussions with leaders in various foreign countries.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 15 cr hrs in courses in the College of Agriculture & Home Economics. Repeatable to a maximum of 15 cr hrs.

Agronomy

Offices: 108 Townshend Hall, 1885 Neil Avenue; 101 Lazenby Hall, 1827 Neil Avenue, 422-2002

General Prerequisites for Courses Numbered 200

Unless otherwise indicated, the prerequisites for 200-level courses are 45 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-199.

200 Plant Science in Agriculture U 5

Study of environmental and genetic factors influencing plant growth and how man can alter these factors to produce economic plants more adequate to his needs. Alban, Geisman, Hartman, Herr, and Utzinger.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: Biology 100 or Botany 110 or Zoology 110. Not open to students with credit for Hort 200. Cross-listed in Horticulture.

240 Soil Science U 5

Introduction to the genetic, physical, chemical, and biological properties influencing soil productivity; laboratory exercises include observation and quantitative determination of certain of these soil properties. Himes.

Su, Au, Wi, Sp Qtrs. 3 cl, 2 2-hr lab. Prereq: Chem 101 and 102, or 121 and 122, or equiv.

H299 Plants and Man U 5

The influence and interaction of limiting factors on plant growth with emphasis on principles utilized by man to increase productivity and value of plant products.

Wi Qtr. 4 cl, assigned reading 1 hr. Prereq: 5 cr hrs in biological sciences and membership in an honors program. Not open to students with credit for 200 or Hort 200 or Hort H299. Cross-listed in Hort.

General Prerequisites for Courses Numbered 300 and 400

Unless otherwise indicated, the prerequisites for 300 and 400-level courses are 90 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-399.

330 Soil in Man's Environment U 5

The physical, chemical and microbiological properties of soils and their effects on the total environment, the role of soil in construction and waste disposal in agriculture and horticulture. Logan.

Sp Qtr. 3 cl, 2 2-hr lab. Prereq: Chem 101 or Geol&Min 100 or 101. Not open to students pursuing a BS in Agriculture.

411 Grain Crops U 4

A study of the grain crops, their classification, geographic distribution, culture, varieties, improvement, seed production, harvesting, handling, recognition, grading and utilization. Ray.

Au, Wi Qtrs. 3 cl, 1 2-hr lab. Prereq: 200 or jr standing.

412 Forage Crops U 4

Principles underlying characteristics, tolerances, requirements, uses; production of forage plants for hay, pasture, silage, soilage and cover. Parsons.

Su, Au, Wi, Sp Qtrs. 3 cl, 1 2-hr lab. Prereq: 200 or Hort 200 or jr standing.

413 Principles of Turfgrass Selection and Management U 4

Adaptation, identification, uses, growth characteristics, growth responses, and fundamental principles essential to the production of quality turf. Karnock and Martin.

Au Qtr. 2 cl, 1 2-hr cl. Prereq: 200 or 240 or Hort 200.

422 Weed Control U 4

A study of weeds, their identification, reproduction and methods of control; emphasis on various aspects of chemical control measures. Herr.

Au, Sp Qtrs. 3 cl, 1 2-hr lab. Prereq: 200 or Hort 200.

441 Soil Erosion and its Control U 4

A study of the mechanics of soil erosion and its control; illustrations of erosion and conservation practices are included. Hoff.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 240.

442 Soil Management U 3

An integrated study of fertility, tillage, erosion control and water management in maintaining soil productivity. Hoff.

Wi Qtr. 3 cl. Prereq: 240.

487 Field Demonstration Techniques U 3

Planning, utilization, interpretation and limitation of field demonstrations. Procedures, precautions and interpretation of soil, plant and water sampling will also be studied. Henderlong.

Au Qtr. 2 cl and 1 2-hr lab. Prereq: Jr standing, 10 cr hrs in agronomy, hort or equiv.

489 Agronomic Employment Experience U 3

Su, Au, Wi, Sp Qtrs. Equiv of 10 wks employment.

Prereq: Written permission of advisor before employment and 10 hrs of agronomy. Repeatable to a maximum of 6 cr hrs. A final written report must be submitted to the advisor.

494 Group Studies U 3 or 5

Selected topics in crop science and/or soil science.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs.

General Prerequisites for Courses Numbered 500

Unless otherwise indicated the prerequisites for 500-level courses are 15 cr hrs in courses in the same discipline numbered 200 or higher or 10 cr hrs in courses numbered 200 or higher in the same discipline plus 10 cr hrs in courses numbered 200 or higher in specified allied disciplines; or baccalaureate degree.

510 Crop Production in Developing Countries U G 5

Fundamental studies of field and plantation crops in tropical and subtropical countries with emphasis on means and techniques for obtaining production increases. Arscott.

Wi Qtr. 5 cl. Prereq: 200 or Hort 200; 240 or equiv.

521 Turfgrass Identification, Adaptation, and Use U G 4

Identification, adaptation, and use of turfgrass species essential to the maintenance of quality turf. Karnock and Martin.

Au Qtr. 2 cl, 1 2-hr cl. Prereq: 200 or Hort 200; 240 and jr standing. Not open to students with credit for 413.

522 Turfgrass Management and Science U G 4

A study of cultural practices and environmental factors affecting the maintenance of quality turf. Karnock and Martin.

Wi Qtr. 2 cl, 1 2-hr cl. Prereq: 521.

523* Commercial Turfgrass Operations U G 3

A detailed examination of turfgrass management systems, including golf courses, home lawns, athletic fields and sod production. Karnock and Martin.

Sp Qtr. 2 2-hr cl. Prereq: 522.

530 Field Crop Breeding U G 4

Principles of genetics and methods of plant breeding applied to the improvement of field crops and the ultimate development of superior varieties. Smith.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 200 or Hort 200; and 411 or 412, and Genetics 500, or equiv.

550 Pedology and Edaphology U G 5

A comprehensive study of soil with respect to its components, morphology, and genesis and how morphology influences soil behavior especially as it pertains to Ohio conditions. Hall.

Sp Qtr. 3 cl, 1 4-hr lab and field trips. Prereq: 200 or Hort 200; 240 and 441 or 442.

593 Individual Studies U G 3 or 5

Students may select special agronomic problems, not included in regular courses and involving library, laboratory, or field studies.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

595 Undergraduate Seminar U 2

Review and interpretation of research publications and study of functions of agronomic industries.

Au, Wi, Sp Qtrs. 2 cl. Prereq: 15 cr hrs in agronomy and 3rd or 4th yr standing in agronomy.

General Prerequisites for Courses Numbered 600

Unless otherwise indicated, the prerequisites for 600-level courses are 15 cr hrs in courses in the same discipline numbered 300 or higher, or 10 cr hrs in courses numbered 300 or higher in the same discipline, plus 10 cr hrs in courses numbered 300 or higher in specified allied disciplines.

602 Field Crop Ecology U G 3

A study of the agroecosystem; the ecology of managed agricultural systems; the interrelationships of climates, soils, and organisms in crop production. Bendixen.

Wi Qtr. 3 cl. Prereq: 10 cr hrs of crops courses and 5 cr hrs of soils courses at the 300 level or higher.

610 Agrostology U G 3

A laboratory, field and discussion course concerning the identification of plants of the grass family, grass evolution and importance of grasses in world agriculture. Parsons.

Wi Qtr. 23-hr labs. Prereq: 15 cr hrs of plant sciences numbered 300 or higher.

612 Principles of Grassland Management U G 5

Plant-animal requirements and correlations in the maintenance, management, and utilization of meadows, pastures, and ranges. Henderlong.

Sp Qtr. 4 cl; and 3 2-hr labs or 1 4-day field trip arr per quarter.

621 Crop Physiology and Production U G 3

A study of the physiological aspects of crop growth and how they relate to various cultural practices; main emphasis will be on corn and soybeans. McDonald.

Au, Wi Qtrs. 3 cl. Prereq: Botany 430 and 431, or equiv.

640 Agroclimatology U G 3

A study of the radiation regime of the atmosphere in relation to the thermal and water regimes of soils and their interrelationships in crop production. Henderlong.

Au Qtr. 3 cl. Prereq: 15 cr hrs of agronomy, botany, hort or equiv at the 300 level or above or permission of instructor.

643 Tropical and Subtropical Soils U G 3

A study of the physical, chemical, and biological properties and the fertilization, physical, and water management of tropical and subtropical soils; crop adaptation, plantation, and subsistence farming. Arscott.

Au Qtr. 3 cl. Prereq: 15 cr hrs of agronomy, numbered 300 or higher or permission of instructor. Not open to students with credit for 543.

650* Advanced Soil Classification Morphology and Genesis U G 5

Theory and principles of soil classification schemes emphasizing the 7th Approximation; classification

and genesis of major soils of the world; methods to establish parent material homogeneity and indices of soil weathering. Bigham.

Wi Qtr. 4 cl, 1 2-hr lab; and 3 2-hr labs or 3 1-day field trips arr per qtr. Prereq: 550, 10 cr hrs from the following: 442, 621, Botany 620, Geol&Min 550.

660 Soil Microbiology U G 5

A study of the morphology and physiology of soil microorganisms and their biochemical transformations of inorganic and organic materials in relation to soil fertility. Miller.

Sp Qtr. 3 cl, 2 2-hr labs. Prereq: 441 or 442, Micrbiol 509, and Chem 241.

670 Soil Fertility U G 3

A study of the factors affecting soil productivity and the practices needed in good soil management; fertilizer properties and practices. Arscott.

Au, Wi Qtrs. 3 cl. Prereq: 441 or 442.

671 Soil Physics U G 5

A study of the physical makeup and properties of soil, including structure, thermal relationships, consistency, plasticity, water, and their relationships. Taylor.

Au Qtr. 3 cl, 22-hr labs. Prereq: 441 or 442, Physics 131 and Math 151.

672 Chemistry of Soils and Fertilizers U G 5

A study of the chemical properties of soils and fertilizers affecting plant growth and composition including modern laboratory analysis of soil, fertilizer, and plant tissue. McLean.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 550, 670, Chem 211 and 9 additional cr hrs in agronomy and/or chem at the 300 level or higher.

693 Individual Studies U G 3 or 5

Students may select special agronomic problems, not included in regular courses and involving library, laboratory, or field studies.

Su, Au, Wi, Sp Qtrs. H693 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

694 Group Studies U G 3 or 5

Discussion of selected topics in crop science and/or soil science.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

695 Organic Soils U G 3

A comprehensive study of organic soils, their formation, chemical and physical characteristics, classification and management. Everett.

Wi Qtr. 3 cl, 1 1-day field trip. Geol&Min 101, and 25 cr hrs in botany or chem.

General Prerequisites for Courses Numbered 700

Unless otherwise indicated, the prerequisites for 700-level courses are 15 cr hrs in courses in the same discipline numbered 400 or higher, plus additional specified course(s) numbered 600 or higher.

750* Methods of Soil Mineralogical Investigations U G 4

Theory, interpretation, and application of mineralogical tools for soil matrices including X-ray diffraction, X-ray spectroscopy, microscopy, thin section, and thermal techniques. Bigham.

Sp Qtr. 2 cl, 22-hr labs. Prereq: 15 cr hrs selected from the following: 550, 671, 672, Geol&Min 623, 638, Chem 521, 621, and 676.

786 Radioactive Tracers in Plant and Soil Research U G 5

Radiochemical principles and techniques used in soil and plant research; designed to prepare the student to conduct radio-tracer experiments. Johnson.

Wi Qtr. 2 cl, 3 2-hr lab. Prereq: 672 or Chem 211 and 15 cr hrs in biological sciences at the 400 level or higher.

General Prerequisites for Courses Numbered 800 and 900

Unless otherwise indicated, the prerequisites for 800 and 900-level courses are 30 cr hrs in courses in the same discipline, or 20 cr hrs in the same discipline, plus 25 cr hrs in specified allied disciplines.

822 Physiological and Biochemical Aspects of Herbicides G 5

Herbicide absorption, course, fate, and mode of action in plants; persistence and fate in soils. Bendixen.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: Botany 631, Chem 253, Biochem 511, and 521.

850†* Soils of the Cold Regions G 3

A study of the morphological, physical, chemical, and biological properties of the soils and environmental features of the polar and alpine regions. Everett.

Sp Qtr. 3 cl. Prereq: 30 cr hrs in agronomy or 30 cr hrs in geog and geol&min and ecology.

860†* Chemistry of Soil Organic Matter G 3

A comprehensive study of soil organic matter including methods of study, theories of synthesis, physical and chemical properties, accumulation and functions of organic matter. Miller.

Sp Qtr. 3 cl. Prereq: 660 and 25 cr hrs in agronomy, or 20 cr hrs agronomy and 25 cr hrs chem, biochem, or micrbio.

870†* Soil-Plant Relationships G 3

Discussion of recent literature pertaining to growth response curves, nutrient uptake, movement of nutrients in the soil, and measurement of availability of nutrients to plants. McLean and Himes.

Su (1st term) Qtr. 3 cl. Prereq: 20 cr hrs in soil and/or plant sciences and 10 cr hrs in plant physiology.

871* Advanced Soil Physics G 3

Moisture, gaseous, and thermal processes and regimes in vegetated soils and their influences on plant growth. Taylor.

Wi Qtr. 3 cl. Prereq: 671 and permission of instructor.

872 Physical Chemistry of Soils G 5

A study of the physiochemical properties of soil including methods of characterizing clay minerals, soil acidity, ionic absorption and release, and plant nutrient uptake. McLean.

Wi Qtr. 3 cl, 2 3-hr labs. Prereq: 671, 672, Chem 521 or 532, and 15 additional cr hrs in agronomy or biological sciences.

880 Seminar G 2

Discussion of current problems in agronomy. Hoff and Stroube.

Su, Au, Wi, Sp Qtrs. 1 cl. Repeatable to a maximum of 12 cr. hrs.

885 Research Principles and Techniques G 1

The philosophy of graduate education and the description of the techniques and special equipment most useful for conducting research in crops and soils science. McLean.

Au Qtr. 1 cl.

887 Techniques of Experimental Design G 5

A study of experimental designs and their application to agricultural research. Henderlong.

Wi Qtr. 5 cl. Prereq: Genetics 650, 651, and 10 cr hrs of agronomy, or related subjects at the 400 level or above.

894 Group Studies G 3 or 5

Advanced topics in crop science and/or soil science.

Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs.

993 Individual Studies G 3 or 5

Students may select special agronomic problems not included in regular courses.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

993.01 Agronomic Instruction

10 hrs lab.

993.02 Unclassified**999 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Air Force Aerospace Studies

Office: 353 Converse Hall, 2121 Tuttle Park Place,
422-5441

General Military Course Freshmen and Sophomores**101 The USAF and Strategic Offensive Forces U 2**

An introduction to the doctrine, organization, and mission of the USAF; and an examination of the strategic offensive forces of the U.S. Military Establishment—from the standpoints of theory and hardware. Special attention is given to SAC and its retaliatory capability.

Au Qtr. 2 cl, 1-hr lab.

102 Strategic Defensive Forces U 2

Examination of Strategic Defensive Forces of the U.S.; analysis of concepts of defense against both manned and unmanned weapons system.

Wi Qtr. 2 cl, 1-hr lab.

103 Tactical Air, General Purpose Forces, and Other Supporting Functions U 2

Study of tactical airpower with emphasis on hardware; doctrine of General Purpose Forces; USAF's supporting commands and agencies.

Sp Qtr. 2 cl, 1-hr lab.

201 Introduction to the Development of Air Power U 2

A study of the factors contributing to change in modern military conflict and the ascension of air power into a primary element of national security.

Au Qtr. 2 cl, 1-hr lab.

202 The Growth of Air Power to Prominence U 2

A study of events and elements which have increased the importance of air power.

Wi Qtr. 2 cl, 1-hr lab.

203 Concepts and Doctrine Governing the Employment of Air Power U 2

A study of the development of concepts of employment of the Air Force to include some of the factors which prompted research and technological change.

Sp Qtr. 2 cl, 1-hr lab.

Professional Officer Course Juniors, Seniors, and Graduate Students**311 Management — Behavior and Decision-Making U 3**

Management course stressing motivational and behavioral processes in individual/group dynamics; decision-making development for junior Air Force officers.

Au Qtr. 3 cl, 1 lab. Prereq: Completion of General Military Course; completion of Air Force ROTC Two-Year Field Training; or permission of instructor.

312 Leadership and Staff Functions U 3

A study of leadership and communication skills within administrative and staff functions to provide the junior Air Force officer with planning and management skills.

Wi Qtr. 3 cl, 1 lab. Prereq: 311 or permission of instructor.

313 Military Justice and Preparation for Active Duty U 3

Introduction to military justice and administrative law together with managerial techniques and orientation to prepare the cadet for active duty as an Air Force officer.

Sp Qtr. 3 cl, 1 lab. Prereq: 312 or permission of instructor.

401 Management—Behavior and Decision Making U 3

Management course stressing motivational and behavioral processes in individual/group dynamics. Decision-making development for junior Air Force officers.

Au Qtr. 3 cl, 1 lab. Prereq: 303 or permission of instructor.

402 Leadership and Staff Functions U 3

A study of leadership and communication skills within administrative and staff functions to provide the junior Air Force officer with planning and management skills.

Wi Qtr. 3 cl, 1 lab. Prereq: 401 or permission of instructor.

403 Military Justice and Preparation for Active Duty U 3

Introduction to military justice and administrative law together with managerial techniques and orientation to prepare the cadet for active duty as an Air Force officer.

Sp Qtr. 3 cl, 1 lab. Prereq: 402 or permission of instructor.

Allied Medicine

School of Allied Medical Professions

Office: 127 School of Allied Medical Professions Building, 1583 Perry Street, 422-5618

425 Critical Phases in Life I U 3

An examination of man's development from conception to death and factors critical to his continuing health.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Biology 100 or Botany 110 or Zoology 110 and 5 hrs psych.

520 Musculoskeletal Disease U G 2-3

Principles, clinical aspects, and therapeutic procedures related to diseases of the musculoskeletal system.

Sp Qtr. 2-3 cl. Prereq: Admission to the School of Allied Medical Professions or written permission of instructor.

530 Neuromuscular Disease U G 3

Survey of injury and disease of the central, peripheral, and autonomic nervous systems; presentation of clinical material.

Wi Qtr. 3 cl. Prereq: Anatomy 201 or permission of instructor.

591 Health Care Organization U 3

An examination of the roles of public and private organizations in planning and supporting health care, including study of health trends, social legislation, and current professional issues.

Sp Qtr. 2 1½-hr cl. Prereq: Enrollment in School of Allied Medical Professions or School of Nursing or permission of instructor.

610 The Hospital as an Educational Institution U G 3

Hospital as a clinical learning environment for medical and allied medical professionals; in-service education; patient and community health education; continuing education.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

625 Critical Phases in Life II U G 3

The application of developmental concepts as reference for evaluation, management, and health care of individuals within their environment.

Au, Sp Qtrs. 3 cl. Prereq: 425 and physiology, or permission of instructor.

630 Management of Hospital Departments U P G 3

An analysis of the management process and its application to the hospital setting.

Au, Sp Qtrs. 3 cl. Prereq: Enrollment in School of Allied Medical Professions or permission of instructor.

650 Application of Computers in Health Sciences U G 3

Basic concepts related to the application, analysis, planning and use of computers in health care, education and research.

Sp Qtr. 2 2-hr cl.

693 Individual Studies U G 1-5

Guided study of selected topics.

Su, Au, Wi, Sp Qtrs. 1-5 cl. H693 (honors) may be available to students enrolled in an honors program and/or by permission of a division within the school. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

694 Group Studies U G 1-5

Supervised group studies of special topics within the various professions of the allied health field.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to maximum of 15 cr hrs.

694.01 Circulation Technology**694.02 Hospital and Health Services Administration****694.03 Medical Communications****694.04 Medical Dietetics****694.05 Medical Illustration****694.06 Medical Record Administration****694.07 Medical Technology****694.08 Occupational Therapy****694.09 Physical Therapy****694.10 Radiologic Technology****694.11 Respiratory Technology****695 Seminar U G 1-6**

Conferences and group discussions of selected topics.

Su, Au, Wi, Sp Qtrs. 1-3 cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

797 Interdepartmental Seminars U P G 1-5

See under Interdepartmental Seminars.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable by permission of associate director of the school.

850 Issues in Allied Health G 3

Discussion and critical examination of current issues in the allied health field and their impact on the health professions.

Su, Au, Sp Qtrs. 1 2-hr cl, 1 hr arr.

889 Practicum in Allied Health G 2-5

Practical experience in the educational or administrative setting within the allied health fields.

Su, Au, Wi, Sp Qtrs. 1 1-hr cl, lab arr. Prereq: 3 cr hrs in educational methodology. Repeatable to a maximum of 10 cr hrs.

999 Research G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 6 cr hrs.

Anatomy

Office: 4072 Graves Hall, 333 West 10th Avenue, 422-4831

For related courses see Medicine and Zoology.

200 Introductory Anatomy U 6

Fundamental principles of human anatomy, supplemented by demonstrations of human material. Guy.

Au, Wi, Sp Qtrs. Prereq: Enrollment in School of

Nursing, Division of Dental Hygiene, School of Allied Medical Professions, College of Pharmacy, or Prepharmacy, or permission of instructor.

201 Neuromuscular Anatomy U 5

Neuromuscular anatomy of the human body. Hostetter.

Au Qtr. 2 cl, 2 3-hr labs. Prereq: Enrollment in School of Allied Medical Professions or permission of instructor.

601 Human Anatomy for Dental Students P G 7

The integrated study of the gross, microscopic, neurologic, and embryonic anatomy of the human body. Vernal and staff.

Su Qtr. 6 cl, 1 3-hr lab. Prereq: Dent fresh standing or permission of instructor.

602 Human Anatomy for Dental Students P G 7

A continuation of 601. Vernal and staff.

Au Qtr. 6 cl, 1 3-hr lab. Prereq: 601 or permission of instructor.

603 Human Anatomy for Dental Students P G 7

A continuation of 602. Vernal and staff.

Wi Qtr. 6 cl, 1 3-hr lab. Prereq: Anatomy 602 or permission of instructor.

641 Applied Anatomy P G 1

Anatomy of the head and neck as applied to clinical dentistry. Russell.

Wi Qtr. 1 cl. Prereq: Dent jr standing.

693 Individual Studies in Anatomy U G 2-5, P 6, 12, 18

Designed to enable the student to pursue a minor investigation in some anatomical field of his choice.

Su, Au, Wi, Sp Qtrs. 1 month, offered all months. Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs for professional credit.

700 Human Histology U G 6

A microscopic study of cells, tissues, and organs with particular emphasis on human; consideration of microscopic structure in relation to function of various organ systems. Hayes.

Sp Qtr. 3 cl, 3 2-hr labs. Prereq: Enrollment in School of Allied Medical Professions or permission of instructor.

701 Human Gross Anatomy U G 6

Regional dissections of upper limb, head, neck and thorax with a study of cross sections and normal x-rays. Gaughran.

Wi Qtr. 3 cl, 3 3-hr labs. Prereq: Permission of instructor.

702 Human Gross Anatomy U G 4

Regional dissection of abdomen, pelvis, and lower limb with a study of cross sections and normal x-rays. Gaughran.

Au Qtr. 2 cl, 2 3-hr labs. Prereq: Permission of instructor.

703 Human Developmental Anatomy U G 4

Detailed analysis of the growth and differentiation of individual organ systems; role of growth factors in differentiation of these systems; common anomalies; discussions of contemporary research methods and innovative teaching techniques. Delphia.

Sp Qtr. 1 cl, 1 2-hr lab, 1 to 2 hrs recitation. Prereq: Permission of instructor.

704 Human Neuroanatomy U G 6

Functional anatomy of the central nervous system and its pathways, cross sections of the brain and spinal cord will be utilized. Humbertson, Clark, Goode, King, and Martin.

Wi Qtr. 3 cl, 3 2-hr labs. Prereq: Permission of instructor.

797 Interdepartmental Seminar U P G 1-5

See Interdepartmental Seminars.
Au, Wi, Sp Qtrs.

805 Anatomical Techniques G 5

The preparation of biological materials for light and electron microscopy. Hostetler.

Au Qtr. Arr. Prereq: Permission of instructor. Open only to grad students in anatomy.

850 Seminar in Anatomy G 1

Discussions of research in progress and reports from the literature of current anatomical problems.

Wi, Sp Qtrs. Repeatable to a maximum of 20 cr hrs.

911 Advanced Studies in Anatomy G 3 or 5

Su, Au, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

911.01 Blood and Hemopoiesis

Morphology of normal and abnormal human blood and bone marrow; developmental hemopoiesis and cellular immune response in various animals. Ackerman, Hostetler, and St. Pierre.

911.02 Connective Tissue and Bone

Activities of fibrous connective tissues emphasizing formation and maintenance of fibers and ground substance; dynamics of the structure, chemistry, and metabolism of bone. Melfi, and Wismar.

911.03 Embryology

Mammalian embryological development emphasizing descriptive or experimental approach; metabolic aspects of development including enzymatic changes, hormonal effects, environmental factors, and teratogenic agents. Delphia, Clark, Hayes, Sucheston, Vernali, and Wismar.

911.04 Microscopic Anatomy

Advanced studies in selected areas of microscopic anatomy. Ackerman, Hayes, Hostetler, St. Pierre, Vernali, and Wismar.

911.05 Neuroanatomy

Advanced study of a particular system or systems in the central nervous system, including literature perusal. Martin, Humbertson, Clark, and King.

911.07 Ultrastructure of the Central Nervous System

Ultrastructure of neurons, neuroglia, and the neuropil of the mammalian central nervous system. King.

911.08 Electron-Microscopy

Examination of specific tissues or cellular populations using electron micrographs; no actual use of the electron microscope. Ackerman and Hostetler.

911.09 Instrumentation and Techniques in Experimental Neuroanatomy

Practical experience in learning techniques utilized in neuroanatomical research problems. Martin, Clark, Humbertson, and King.

911.10 Principles of Human Cytogenetics

Human cytogenetics as related to autosomal and sex chromosomes; technique of tissue culture for study of human chromosome(s) and karyotype analysis. Hayes.

911.11 Design of Computer Teaching Programs

Methods and logic of writing subject oriented computer assisted instruction (CAI) programs. Wismar.

911.12 Anatomy of Newborn

Gross anatomy of the newborn correlated with prenatal and postnatal development; dissection and section study. Gaughran and I. Eglitis.

911.13 Topographical Anatomy

Study of unmounted serial cross sections of selected regions of the human body emphasizing the inter-relationship of structures to one another in a three-dimensional perspective. Gaughran, I. Eglitis, and Russell.

911.14 Advanced Regional Dissections

Careful dissection of one or more regions of the body, supplemented with literature research. Gaughran, I. Eglitis, Negulesco, and Russell.

911.15 Human Anatomy: Radiological Manifestations

Methods of routine projections and interpretations for best visualizing anatomical structures.

999 Research in Anatomy G Arr

Research for thesis or dissertation purposes only.
Su, Au, Wi, Sp Qtrs.



Anesthesiology

Office: N420 University Hospital, 410 West 10th Avenue, 422-5591

793 Individual Studies in Anesthesia P 6, 12, 18 G 3-5

Designed to offer to medical and graduate students an opportunity to pursue research related to anesthesia in either basic science or clinical science. Hamelberg and staff.

1, 2, 3, or 4 months; offered all months (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs for prof cr; repeatable to a maximum of 15 cr hrs for grad cr.

794 Group Studies in Anesthesia P 6

Designed to give medical students clinical experience in the administration of anesthesia. Hamelberg and staff.

1 month, offered all months. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

850 Seminar in Anesthesiology G 3 or 5

Group and individual discussions of current problems in anesthesiology and their management; discussions of basic and applied topics.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

999 Research in Anesthesiology G Arr

Research for thesis purposes only.
Su, Au, Wi, Sp Qtrs.

Animal Science

Office: 110 Animal Science Building, 2029 Fyffe Road, 422-6401

100 Domestic Animals in the Service of Man U 5

The role of the animal industry in the world and the importance of the application of science in meeting the needs in the production, distribution, and utilization of animal products. Barr, Plimpton, and Stephens.

Au, Wi, Sp Qtrs. 5 cl. Offered in cooperation with Dairy Sc and Pltry Sc.

General Prerequisites for Courses Numbered 200

Unless otherwise indicated, the prerequisites for 200-level courses are 45 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-199.

200 Introductory Animal Science U 5

Introduction to selection, breeding, feeding, management, marketing, and utilization of beef cattle, swine, and sheep; a limited discussion of the horse is included. Irvin, Judy, Kinder, Plimpton, and R. Wilson.

Au, Wi, Sp Qtrs. 3 cl, 2 2-hr lab. Prereq: 100.

250 Meat Selection and Identification U 3

The structure and composition of beef, pork, veal, and lamb are used to distinguish grades and usefulness of meat products for domestic and institutional purposes. Parrett.

Au, Wi, Sp Qtrs. 3 2-hr lab.

General Prerequisites for Courses Numbered 300 and 400

Unless otherwise indicated, the prerequisites for 300- and 400-level courses are 90 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-399.

420 Principles of Animal Improvement U 5

An introduction to the methods available for bringing about genetic change in farm animals. Fechheimer, Irvin, and Swiger.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 100, Math 148 or equiv, and Genetics 140. Not open to students with credit for Dairy Sc 420 or Pltry Sc 420. Cross-listed in Dairy Sc and Pltry Sc.

430 Principles of Animal Nutrition U 5

A study of the fundamental principles of nutrition in mammals and birds. Cline, Latshaw, and Tyznik.

Su, Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: Chem 102 or 122 and Math 148 or equiv. Not open to students with credit for Dairy Sc 430 or Pltry Sc 430. Cross-listed in Dairy Sc and Pltry Sc.

440 Livestock Management U 5

Feeding, breeding, and managing of beef, sheep, and swine; laboratory exercises are concerned with major management problems. G. Wilson.

Wi Qtr. 3 cl, 2 2-hr lab. Prereq: 200 and 430. Not recommended for animl sc majors.

452 Meat and Meat Products U 3

Analysis of the interdependent factors of meat animals, meat and meat products, processing and merchandising in their relationship to man as producer, processor, and consumer. Cahill and Plimpton.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 5 cr hrs animl sc. Not open to students with credit for 450.

453 Meat and Meat Products Laboratory U 3

Conversion of meat animals to the variety of consumer products; slaughter, cutting, curing, preservation, and other processing; product evaluation related to animal value and consumer needs. Cahill, Parrett, and Plimpton.

Au, Wi, Sp Qtrs. 2 3-hr lab. Prereq or concur: 452.

455 Meat Animal and Carcass Evaluation U 3

The factors that influence the value of meat animals, carcasses, and whole sale cuts in accordance with recognized grading standards; laboratory practice. Althouse.

Wi Qtr. 1 cl, 2 2-hr lab. Prereq: 200. Not open to students with credit for 451.

494 Group Studies U 3-5

Su, Au, Wi, Sp Qtrs. Arr. Repeatable to a maximum of 15 cr hrs.

General Prerequisites for Courses Numbered 500

Unless otherwise indicated, the prerequisites for 500-level courses are 15 cr hrs in courses in the same discipline numbered 200 or higher, or 10 cr hrs in courses numbered 200 or higher in the same discipline, plus 10 cr hrs in courses numbered 200 or higher in specified allied disciplines; or baccalaureate degree.

500 Livestock Selection U G 5

Laboratory exercises employing current standards of animal excellence including carcass value for the selection and improvement of farm livestock. Kinder.

Sp Qtr. 5 2-hr lab-discussions. Prereq: 200, 430, and 5 additional cr hrs in 541, 542, 543, or 544.

Livestock Marketing

See Agr Econ 522. Offered in cooperation with Agr Econ.

522 Genetic Improvement of Beef Cattle U G 3

Use of genetic principles to develop breeding plans for selection of seedstock herds for economic traits and their utilization in commercial production. Swiger.

Wi Qtr. 3 cl. Prereq: Animl, Dairy or Pltry Sc 420.

523 Genetic Improvement of Swine U G 3

Application of genetic principles for swine improvement. Selection, mating, testing for predicting genetic value and use of data in decision-making criteria for economically important characteristics. Irvin.

Sp Qtr. 3 cl. Prereq: Animl, Dairy, or Pltry Sc 420.

541 Horse Production and Management U G 5

The application of science and basic principles of nutrition, genetics, physiology, and marketing to the production and management of horses. Kline.

Au Qtr. 3 cl, 2 2-hr lab. Prereq: 200, 430, and 5 additional cr hrs in animl or dairy sc.

542 Beef Cattle Production and Management U G 5

The application of science and basic principles of nutrition, genetics, physiology, and marketing to the production and management of beef cattle. G. R. Wilson.

Au, Sp Qtrs. 3 cl, 2 2-hr lab. Prereq: 200, 430, and 5 additional cr hrs in animl, dairy, or pltry sc.

543 Swine Production and Management U G 5

Selection of breeding stock, reproduction, feeding, management, and sale of commercial and breeding swine; swine herds, markets, and research stations are visited. R. F. Wilson.

Wi, Sp Qtrs. 3 cl, 2 2-hr lab. Prereq: 200, 430, and 5 additional cr hrs in animl, dairy, or pltry sc.

544 Sheep Production and Management U G 5

The application of science and basic principles of nutrition, genetics, physiology, and marketing to the production and management of sheep. Judy.

Wi, Sp Qtrs. 3 cl, 2 2-hr lab. Prereq: 200, 430, and 5 additional cr hrs in animl, dairy, or pltry sc.

550 Meat Processing U G 3

Fundamental changes in soft animal tissues resulting from comminution and application of chemicals and heat. Cahill.

Au Qtr. 2 cl, 1 2-hr lab. Prereq: 450 or 452.

593 Individual Studies U G 2-5

Special assignments and elementary research; problems assigned after consultation with instructor in charge.

Su, Au, Wi, Sp Qtrs. H593 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Prereq: Jr or sr standing and permission of instructor.

General Prerequisites for Courses Numbered 600

Unless otherwise indicated, the prerequisites for 600-level courses are 15 cr hrs in courses in the same discipline numbered 300 or higher, or 10 cr hrs in courses numbered 300 or higher in the same discipline, plus 10 cr hrs in courses numbered 300 or higher in specified allied disciplines.

610 Physiology of Lactation U G 3

The physiological, endocrine, nutritional, and environmental factors influencing the synthesis and ejection of milk. Barr and Porter.

Au Qtr. 2 2-hr cl. Prereq: Vet Phys 411 and 20 cr hrs in animl sc, dairy sc, or vertebrate biology. Not open to students with credit for Dairy Sc 610. Cross-listed in Dairy Sc.

612 Physiology of Reproduction and Growth U G 3

Physiology of the reproductive system and growth and development in farm animals; factors influencing reproductive performance. Ludwick and Kinder.

Au, Sp Qtrs. 3 cl. Prereq: Vet Phys 411 and 20 cr hrs in animl sc, dairy sc, or vertebrate biology. Not open to students with credit for Dairy Sc 612. Cross-listed in Dairy Sc.

613 Laboratory in Reproductive Physiology and Artificial Insemination U G 3

Comparative anatomy and physiology of reproduction of farm animals; physiological bases for the use of artificial insemination in research laboratory and in the field. Ludwick.

Au, Sp Qtrs. 2 2-hr lab. Prereq or concur: 612. Not open to students with credit for Dairy Sc 613. Cross-listed in Dairy Sc.

630 Nutrition and Feeding of Monogastric Animals U G 5

The nutrition of swine, poultry, and laboratory animals; principles and practice. Latshaw.

Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 430 or equiv. Not open to students with credit for Pltry Sc 630. Cross-listed in Pltry Sc.

631 Nutrition and Feeding of Ruminant Animals U G 5

The nutrition of dairy cattle, beef cattle, and sheep; principles and practice. Cline, Staubus, and Tyznik.

Su, Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 430 or equiv. Not open to students with credit for Dairy Sc 631. Cross-listed in Dairy Sc.

632 Equine Nutrition U G 5

Physiology, biochemistry and practical application of feeding horses. Tyznik.

Sp Qtr. 5 cl. Prereq: 430.

642 Cattle Feedlot Management U G 3

Fundamentals of cattle feedlot operation with emphasis on improved management practices. G. Wilson.

Wi Qtr. 2 2-hr cl. Prereq: 542.

650 Advanced Meat Technology

Evaluation of scientific contribution to meat products and processing. Cahill and Ockerman.

Sp Qtr. 2 cl, 2 1-hr lab. Prereq: 15 cr hrs chem, 5 cr hrs micrbiol, and 5 cr hrs anatomy.

651 Laboratory Analysis of Meat Products U G 5

Analysis of meat products by physical, chemical, and microbiological techniques. Ockerman.

Wi Qtr. 2 cl, 2 1-hr lab., 4 hrs arr. Prereq: 450 or 452, 453; 10 cr hrs chem, and 5 cr hrs micrbiol.

654 Quality Control Interpretation U G 3

Sampling, statistical plotting and chart interpretation using examples drawn from the food area. Ockerman.

Sp Qtr. 3 cl.

693 Individual Studies U G 3-5

Special assignments and advanced research; problems assigned after consultation with the instructor in charge.

Su, Au, Wi, Sp Qtrs. H693 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Prereq: Permission of instructor.

694 Group Studies U G 3-5

Special assignments and advanced research; problems assigned after consultation with the instructor in charge.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

General Prerequisites for Courses Numbered 700

Unless otherwise indicated, the prerequisites for 700-level courses are 15 cr hrs in courses in the same discipline numbered 400 or higher, plus additional specified course(s) numbered 600 or higher.

710 Advanced Reproductive Physiology U G 3 or 5

Recent advances in research in mammalian reproduction; optional individual research experience in reproductive problems with small and large mammals for additional credit. Gomes.

Sp Qtr. 2 2-hr cl. Prereq: 612 and acceptable courses in physiol, anatomy, and biochem. Not open to students with credit for Dairy Sc 710. Cross-listed in Dairy Sc.

721 Genetics of Animal Populations I U G 3

Parameters of static populations, genetic arrays and equilibria and statistical measures. Partitioning the phenotypic variance mutation, migration, selection and chance. Swiger.

Wi Qtr. 3 cl. Prereq: 420 or Genetics 500 and Genetics 650 or equiv. Not open to students with credit for Dairy Sc or Pltry Sc 721. Cross-listed in Dairy Sc and Pltry Sc.

722 Genetics of Animal Population II U G 3

Selection for polygenic characters, mating systems and development of breeding plans. Swiger.

Sp Qtr. 3 cl. Prereq: 721 or Dairy Sc 721 or Pltry Sc 721 or equiv. Not open to students with credit for Dairy Sc or Pltry Sc 722. Cross-listed in Dairy Sc and Pltry Sc.

General Prerequisites for Courses Numbered 800 and 900

Unless otherwise indicated, the prerequisites for 800 and 900-level courses are 30 cr hrs in courses in the same discipline, or 20 cr hrs in the same discipline, plus 25 cr hrs in specified allied disciplines.

800 Seminar G 1

Discussions of current animal science research.

Au, Wi, Sp Qtrs. Prereq: Animl sc grad standing.

810 Advances in Physiology of Domestic Animals G 3

Au, Wi, Sp Qtrs. 4-hr cl. Prereq: Written permission of instructor and acceptable courses in physiol, anatomy, and biochem. Not open to students with credit for Dairy Sc 810 or Pltry Sc 810. Cross-listed in Dairy Sc and Pltry Sc.

810.01 Anterior Pituitary Function

Bacon.

Au Qtr.

810.02 Endocrinology of Reproduction

Gomes.

Wi Qtr.

810.03 Immunology and Immunogenetics

Hines.

Sp Qtr.

810.04†* Thyroid and Parathyroid Function

Au Qtr.

810.05†* Mammalian Germ Cells

Murray.

Wi Qtr.

810.06†* Biometeorology and Animal Performance

Ludwick.

Wi Qtr.

820 Current Topics in Animal Genetics G 3

3 cl. Prereq: Acceptable courses in animal genetics, math, and statistics. Not open to students with credit for Dairy Sc 820 or Pltry Sc 820. Repeatable to a maximum of 12 cr hrs. Cross-listed in Dairy Sc and Pltry Sc.

820.01 Selection Index Theory

Allaire.

Au Qtr.

820.02* Non-additive Genetic Variance

Harvey and Swiger.

Wi Qtr.

820.03* Polymorphic Systems

Fechheimer.

Wi Qtr.

820.04†* Simulation of Genetic Systems

Harvey.

Wi Qtr.

820.05†* Cytogenetics of Animal Populations

Fechheimer.

Wi Qtr.

820.06†* Physiological Indices in Animal Breeding

Fechheimer.

Au Qtr.

830 Advanced Studies in Nutrition G 3

Su, Au, Wi, Sp Qtrs. 3 or 4 cl. Prereq: 630 or 631 or Humn Ntr 610; Fd Sc&Nu 761 and 762; 10 grad cr hrs in physiol. Not open to students with credit for Dairy Sc 830 or Humn Ntr 830 or Pltry Sc 830. Cross-listed in Dairy Science, Human Nutrition and Food Management and Poultry Science.

830.01* Energy

Byers and Conrad.

Au Qtr.

830.02* Minerals

Cline.

Wi Qtr.

830.03* Proteins and Amino Acids

Naber and Vivian.

Sp Qtr.

830.04†* Vitamins

Naber.

Au Qtr.

830.05†* Lipids

Palmquist.

Wi Qtr.

830.06†* Laboratory Methods in Nutrition

Sp Qtr.

830.07* Rumen Microbiology

Dehority.

Su Qtr. This course not available in Pltry Sc.

856* Food in International Agriculture G 3 or 5

A study of international food production, processing and utilization. Ockerman.

Su Qtr. 5 cl. 1 1-hr lab. Repeatable to a maximum of 6 cr hrs.

998 Interdepartmental Seminar in Nutrition G 1

See Interdepartmental Seminars.

999 Research G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Anthropology

Office: 208 Lord Hall, 124 West 17th Avenue, 422-4149

200 Introduction to Physical Anthropology U 5

A scientific examination of man as a biological and cultural organism based on primate evolution from living and fossil evidence; evolutionary theory and population adaptability.

Su, Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 251.

201 Introduction to Prehistory U 5

World prehistory from the origin of human culture through the development of civilization illustrated by selected examples; archeological field method; concepts of analysis and interpretation. Dancey and Sumner.

Su, Au, Wi Sp Qtrs. 5 cl. Not open to students with credit for 261.

202 Introduction to Cultural Anthropology U 5

Comparative survey of tribal and peasant peoples in the several world culture regions; culture concepts; study of selected topics. Messenger and staff.

Su, Au, Wi, Sp Qtrs. 5 cl. H202 (honors may be available to students enrolled in an honors program or by permission of dept. Not open to students with credit for 210.

294 Group Studies U 2-5

Designed to give groups of students an opportunity to pursue special studies in topics not otherwise offered.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs.

412 Indians of the Americas U 4

American Indian cultures at the time of European conquest. Williams.

Wi, Sp Qtrs. 4 cl.

421 Regional Survey Course in Cultural Anthropology U 4

A survey of the cultures of selected regions.

Su, Au, Wi, Sp Qtrs. 4 cl. Repeatable to a maximum of 16 cr hrs in any combination of decimal subdivisions.

421.01 China

A general survey of the traditional Chinese culture and society; family, kinship, and socio-political organizations; their transformations during the last century. Chen.

Not open to students with credit for 414.

421.02 Southeast Asia

Survey of the peoples of the region and their cultures; prehistoric origins; diversity and similarity; processes of modernization that most Southeast Asian countries are undergoing. Chen.

Not open to students with credit for 414.

421.03 Traditional Africa

Traditional cultures of Africa south of the Sahara; distribution of physical types; languages; cultural areas; West Coast kingdoms as a source of the American blacks. Arewa.

Not open to students with credit for 415.

421.04 Changing Societies in Africa

Study of the ways in which the retention of established customs and the acceptance of innovation have interacted in selected spheres of life in contemporary Africa. Arewa.

421.05 Latin America

The pre-Columbian background; contemporary cultures and social organization; the emergence of Latin America as a distinct culture area in the modern world.

Not open to students with credit for 416.

500 Dynamics of American Culture U G 4

A review of American customs, institutions, social systems, and ideas, with emphasis on recent cultural anthropological studies. Williams.

Au, Wi Qtrs. 4 cl. Not open to students with credit for 401.

505 Social Relations in Folk Societies U G 4

Forms of social organization in simpler societies; dynamics of social relations in such societies; a comparison of simpler forms of social structure with complex forms. Schwarz.

Au, Sp Qtrs. 4 cl. Not open to students with credit for 410.

510 Culture Contact and Technological Change U G 4

Consequences for folk societies of the diffusion of Euro-American culture; introduction of advanced technology to underdeveloped areas; cultural aspects of colonialism and military government. Hughes and Friedl.

Sp Qtr. 4 cl.

515 Anthropology of Religion U G 4

World views in folk societies, emphasizing religion and sacred beliefs; integration of these beliefs with social organization and the arts. Bourguignon and Messenger.

Su, Wi, Qtrs. 4 cl. Not open to students with credit for 610.

525 History of Anthropological Theory U G 4

Major theoretical viewpoints in anthropology, seen in their historical context.

Wi Qtr. 4 cl. Prereq: 20 cr hrs in allied subjects or written permission of instructor. Not open to students with credit for 570.

530 Fossil Man U G 4

A comprehensive study of the fossil hominids; fossils of Homo sapiens and their relation to other fossil hominids. Poirier.

Au Qtr. 4 cl. Prereq: 200 or equiv or 15 cr hrs in biological sciences or geol&min or permission of instructor. Not open to students with credit for 450.

535 Physical Variability of Modern Man U G 4

The racial classification of man on a biological basis; the evolution of Homo sapiens and the development of human variability; racial differences and mixtures. Post.

Sp Qtr. 4 cl. Prereq: 200 or equiv or 15 cr hrs in biological sciences, including genetics, or permission of instructor. Not open to students with credit for 452.

551 Regional Survey in Prehistory U G 4

Survey of selected regions from earliest times until the rise or intrusion of literate civilization; emphasis on current research and problems of general anthropological interest. Dancey and Summer.

Au, Wi, Sp Qtrs. 4 cl.

551.01 North America

551.02 Mesoamerica

551.03 Middle East

551.04 Europe

556 Principles of Archaeological Field Research U G 4

Instruction in the design of archaeological data recovery programs and their implementations through survey and excavation plus analysis and interpretation of artifacts. Dancey, Sumner and Baby.

Au, Sp Qtrs. 1 day or weekend field trip. Prereq: 201 or equiv or written permission of instructor. Not open to students with credit for 555 or 556.02.

565 Archaeological Training Expedition U 8-16

Joint expedition of The Ohio State University Department of Anthropology, and the Ohio State Museum, engaged in excavating prehistoric sites in Ohio; experience in archaeological field work. Baby and staff.

Su Qtr. 8 cr hrs for either term. (Full time in expedition camps.) Prereq: 556 or 556.02 or equiv or 10 cr hrs of work closely related to archaeological field research, and permission of instructor. Not open to students with credit for 664.

600 Psychological Anthropology U G 4

Anthropological contributions to the field of social psychology; variations in personality as associated with variations in culture; the range of personality differences within various cultures. Bourguignon and Messenger.

Sp Qtr. 4 cl. Not open to students with credit for 509 or 520.

620 Special Topics in Cultural Anthropology U G 4

Examines in detail topics of special interest in contemporary cultural anthropology.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 202 or equiv or permission of instructor. Repeatable to a maximum of 16 cr hrs in any combination of decimal subdivisions.

- 620.01 Political Anthropology**
- 620.02 The Anthropology of Women**
- 620.03 Peasant Culture**
- 620.04 Urban Anthropology**
- 620.05 Cultural Ecology**
- 620.06 Folkloristic Anthropology**
- 620.07 Anthropology of Education**
- 620.08 The Anthropology of Sex**

Primate sexual behavior; sex and the origins of society and culture; sexual maturation and enculturation; cross-cultural sexuality; sex in art and folklore; sex research.

Sp Qtr. 4 cl.

640 Special Topics in Physical Anthropology U G 4

Deals with current areas of concern to physical anthropologists. Poirier and Post.

Au, Wi Qtrs. 4 cl. Prereq: 200 or equiv or permission of instructor. Repeatable to a maximum of 8 cr hrs in any combination of decimal subdivisions.

- 640.01 Primate Behavior**
- 640.02 Growth and Development**
- 640.03 Dental Anthropology**

656 Principles of Archaeological Analysis and Interpretation U G 4

Examination of the assumptions and concepts underlying analysis of archaeological data; methods of reconstructing cultural history, past lifeways, and explaining cultural change. Dancey and Sumner.

Au, Sp Qtrs. 4 cl. Prereq: 202 or equiv or written permission of instructor. Not open to students with credit for 556.01.

675 Introduction to Anthropological Linguistics U G 4

Relations of language to social organization, world view, socialization, and cultural analysis. Callaghan.

Wi Qtr. 4 cl. Prereq: 10 cr hrs in anthrop or permission of instructor. Not open to students with credit for 575.

685 Advanced Archaeological Training Expedition U G 8-16

Practical experience in archaeological fieldwork including site survey, excavation, surveying and mapping, preservation, and other related methods and techniques of data recovery. Dancey and Sumner.

Su, Au Qtrs. Full time in expedition camp. Prereq: Written permission of instructor. Repeatable to a maximum of 32 cr hrs.

693 Individual Studies U 1-4

Su, Au, Wi, Sp Qtrs. Prereq: 30 cr hrs in anthrop or written permission of instructor. Repeatable to a maximum of 20 cr hrs, not more than 4 in any one decimal subdivision.

- 693.01 Theory**
- 693.02 History**
- 693.03 Anthropological Linguistics**
- 693.04 Research Methodology**
- 693.05 Prehistory**
- 693.06 Ethnography**
- 693.07 Physical Anthropology**
- 693.08 Unclassified**

694 Group Studies U G 2-15

Designed to give groups of students an opportunity to pursue special studies in topics not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

H783 Honors Course U 3-5

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the anthrop courses and an average of B in the remainder; permission of the instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degree BA *with distinction* in anthrop. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs.

803 Core Seminars in Anthropology G 5

Au, Wi, Sp Qtrs.

- 803.01 Theory**
- 803.02 Cultural Anthropology I**
- 803.03 Cultural Anthropology II**
- 803.04 Physical Anthropology I**
- 803.05 Physical Anthropology II**
- 803.06 Prehistory I**
- 803.07 Prehistory II**
- 803.08 Anthropological Linguistics**

805 Seminars in Ethnology G 3-5

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Repeatable to a maximum of 30 cr hrs, not more than 10 of which shall be in any one of the following topics.

- a—North America
- b—South America
- c—East Asia
- d—Southeast Asia
- e—Oceania
- f—South Asia
- g—Middle East
- h—Africa
- i—Europe
- j—Circumpolar

810 Seminars in Cultural Anthropology G 3-5

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Repeatable to a maximum of 30 cr hrs, not more than 10 of which shall be in any one of the following topics.

- a—Nature of Culture
- b—Acculturation, Change, and Stability
- c—Culture and Personality
- d—Enculturation
- e—Social Organization
- f—Religious Behavior
- g—Field Methods in the Study of Culture
- h—Theory and Problems in Cultural Anthropology
- i—Peasant Cultures
- j—Cultural Evolution
- k—Human Ecology

820 Seminars in Physical Anthropology G 3-5

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Repeatable to a maximum of 30 cr hrs, not more than 10 of which shall be in any one of the following topics.

- a—Theory and Method in Physical Anthropology
- b—Serology
- c—Primate Structure and Behavior
- d—Fossil Man
- e—Osteometry
- f—Anthropometry
- g—Physical Variability of Man
- h—The Physical Anthropology of Selected World Culture Regions

830 Seminars in Prehistory G 3-5

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Repeatable to a maximum of 30 cr hrs, not more than 10 of which shall be in any one of the following topics.

- a—Method and Theory
- b—North American Archaeology
- c—Middle Eastern Archaeology
- d—Archaeology of High Civilizations
- e—Special Problems in Archaeology

894 Group Studies G 3-15

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 20 cr hrs; topics may not be repeated.

- a—Theory
- b—History
- c—Anthropological Linguistics
- d—Research Methods
- e—Prehistory
- f—Ethnology
- g—Physical Anthropology
- h—Unclassified

896 Interdepartmental Seminar in Polar and Alpine Studies G 1-3

See Interdepartmental Seminars.

899 Interdepartmental Seminar G 1-5

See Interdepartmental Seminars.

Su, Au, Wi, Sp Qtrs.

993 Individual Studies G 1-5

Su, Au, Wi, Sp Qtrs. 2 conf hrs. Repeatable to maximum of 20 cr hrs, not more than 10 of which shall be in any one of the following topics.

- a—Theory
- b—History
- c—Anthropological Linguistics
- d—Research Methods
- e—Prehistory
- f—Ethnology
- g—Physical Anthropology
- h—Cultural Anthropology
- i—Unclassified

998 Research in Anthropology: Thesis G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

999 Research in Anthropology: Dissertation G Arr

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Arabic

Office: 248 Dieter Cunz Hall of Languages, 1841 Millikin Road, 422-5842

101 Elementary Literary Arabic I

Sound and writing systems, morphological patterns, basic sentences with brief dialogues.

101.01 Classroom Track U 5

Au Qtr. 5 cl. Students must register for and complete 5 cr hrs during the quarter.

101.03 Individualized Track U 1-5

Su, Au, Wi, Sp Qtrs. Students register for and complete from 1 to 5 cr hrs during the quarter. Students who complete 5 hrs before the end of the quarter may proceed to 102.02. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement.

102 Elementary Literary Arabic II

Continuation of morphological patterns and basic syntactic structures, with long dialogues and simple pieces of expository prose.

102.01 Classroom Track U 5

Wi Qtr. Prereq: 101.01 or 5 cr hrs of 101.03. Students must register for and complete 5 cr hrs during the quarter.

102.03 Individualized Track U 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Grade of B- or above in 101.01 or 5 cr hrs of 101.03 or permission of instructor. Students may register for 101.03 or 102.03 concurrently with permission of instructor. Students register for and complete from 1 to 5 cr hrs during the quarter. Students who complete 5 hrs before the end of the quarter may proceed to 103.03. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement.

103 Modern Literary Arabic I

Complex morphological forms and syntactic structures; reading; oral and written practice.

103.01 Classroom Track U 5

Sp Qtr. 5 cl. Prereq: 102.01 or 5 cr hrs of 102.03 or 110. Students must register for and complete 5 cr hrs during the quarter.

103.03 Individualized Track U 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Grade of B- or above in 102.01, or 5 cr hrs in 102.03, or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the quarter. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement.

104 Modern Literary Arabic II U 5**104.01 Modern Literary Arabic II**

Emphasis on modern standard literary Arabic reading, writing, speaking, and aural comprehension.

Au Qtr. 5 cl. Prereq: 103.01 or 5 cr hrs of 103.03 or 112. Not open to students with credit for 602.

110 Intensive Elementary Arabic U 5, 10

Elementary Arabic for students wishing to acquire the basic skills in one quarter; intensive drill in forms, syntax, vocabulary, and idioms; equivalent to 101 and 102.

Su, Au, Wi, Sp Qtrs. 10 cl. Prereq: Permission of dept. Not open to students with credit for 102. Students with credit for 101 or equiv may not register for more than 5 cr hrs.

112 Intensive Modern Literary Arabic U 5, 10, 15

Elementary and intermediate literary Arabic; intensive drill in forms, syntax, vocabulary and idioms; reading of selected material in modern Arabic.

Su Qtr. 15 cl. Enrollment limited to 25 students. Prereq: Permission of chairman. Full time of student and full fees required. Equiv of 101, 102, and 103. Students with credit for 101 or the equiv may not register for more than 10 hrs. Students with credit for 101 and 102 or the equiv may not register for more than 5 hrs. Students with credit for 103 or 601 or the equiv may not register for credit.

201 Basic Colloquial Arabic U 5

Introduction to phonology and grammar of the spoken language of educated urbanites of the Eastern Arab world.

Au Qtr. 5 cl. Not open to students with credit for 106.

202 Basic Colloquial Arabic U 5

Continuation of 201; analysis of and drill in morphological and syntactic patterns; expansion of vocabulary; practice in conversation.

Wi Qtr. 5 cl. Prereq: 201 or permission of instructor. Not open to students with credit for 107.

203 Intermediate Colloquial Arabic U 5

Intensive practice in speaking Arabic with emphasis on various cultural aspects of Arab life.

Sp Qtr. 5 cl. Prereq: 202.

241 Culture of the Contemporary Arab World U 5

A general survey and examination of the socio-cultural structure of the modern Arab world.

Au, Wi, Sp Qtrs. 5 cl. Taught in English.

271 Classical Arabic Literature in Translation U 3

A general survey of classical Arabic literature in its historical and cultural context.

Au Qtr. 3 cl. Prereq: English 100 or equiv.

272 Medieval Arabic Literature in Translation U 3

A general survey of the major genres, movements, and masterpieces of medieval Arabic literature.

Wi Qtr. 3 cl. Prereq: English 100 or equiv.

273 Modern Arabic Literature in Translation U 3

A general survey of modern Arabic literature, emphasizing the impact of western literary concepts.

Sp Qtr. 3 cl. Prereq: English 100 or equiv.

274 Hispano-Arabic Literature in English Translation U 3

A general survey of Hispano-Arabic literature and culture; their relationship to the intellectual life in medieval Europe.

Au Qtr. 3 cl. Prereq: English 100 or equiv.

293 Individual Studies U 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 cr hrs.

294 Group Studies U 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 cr hrs.

402 Review of Arabic Grammar U 5

Review of Arabic grammar; practice in translation; reading on a wide range of topics in a variety of genres and styles.

Wi Qtr. 5 cl. Prereq: 104. Not open to students with credit for 603.

403 Modern Literary Arabic Conversation and Composition I U 5

Practice in aural comprehension; conversation; and controlled compositions on various aspects of Arab culture.

Sp Qtr. 5 cl. Prereq: 402. Not open to students with credit for 604.

404 Modern Literary Arabic Conversation and Composition II U 5

Continuation of 403.

Au Qtr. 5 cl. Prereq: 403. Not open to students with credit for 605.

611* History of the Arabic Language U G 5

Survey of the evolution of the Arabic language in its cultural and historical setting. Cadara.

Wi Qtr. 5 cl. Prereq: Permission of instructor.

622* Contemporary Arabic Short Stories U G 5

Reading of a selection of modern short stories by some of the representative writers in the Arab world. Cadara.

Wi Qtr. 5 cl. Prereq: 402.

623* Contemporary Arabic Poetry U G 5

Reading of Arabic poems representing major stylistic trends. Cadara.

Sp Qtr. 5 cl. Prereq: 402.

624* Contemporary Arabic Drama U G 5

Reading and analysis of representative plays.

Sp Qtr. 5 cl. Prereq: 402.

625* Contemporary Arabic Novel U G 5

Reading and analysis of selected novels.

Wi Qtr. 5 cl. Prereq: 402.

626 Introduction to the Qur'an U G 5

A linguistic, literary, and cultural analysis of selected chapters from the Qur'an.

Sp Qtr. 5 cl. Prereq: 402.

627* Classical Arabic Poetry U G 5

Selected readings from classical and medieval Arabic poetry; Arabic metrics and literary theory. Zwettler.

Wi Qtr. 5 cl. Prereq: 402.

628 Classical Arabic Prose U G 5

Selected readings reflecting the evolution of Arabic prose literature from its origins to the Abbasid period. Zwetler.

Wi Qtr. 5 cl. Prereq: 402.

671 The Koran in Translation U G 5

An introduction, in English, to the literary, religious, and cultural implications of the fundamental Book of Arabic literature and of Islamic civilization.

Sp Qtr. 5 cl.

680 Basic Bibliographic and Reference Tools in Arabic and Islamic Studies U G 5

Sp Qtr. 5 cl. Prereq: 10 cr hrs in Middle Eastern history or literature or equiv.

693 Individual Studies U G 1-5

Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

694 Group Studies U G 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

H783 Honors Course U 3-5

Offers undergraduates with special aptitudes a greater opportunity to do independent study and research than is possible in normal course work.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the Arabic courses and an average of B in the remainder; permission of the instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Repeatable to a maximum of 15 cr hrs. At least 2 qtrs are required of candidates for the degree BA with distinction in Arabic. Failure to receive a mark of S in this course is a disqualification for special honors.

Architecture

Office: 171 Brown Hall, 190 West 17th Avenue, 422-6806

221 Architectural Graphics U 3

Descriptive geometry and related applications of orthographic projection in architecture; lettering; perspective; shades and shadows.

Au Qtr. 3 cl. Open only to students enrolled in the School of Architecture.

222 Construction Materials U 3

Basic properties and production of architectural building materials; theory of working drawings and dimensioning; calculations and drawings of site work.

Wi Qtr. 3 cl. Open only to students enrolled in the School of Architecture.

223 Construction Methods U 3

Detailing of building sections, simple enclosures, and structural assemblies; analysis of acoustics.

Sp Qtr. 3 cl. Prereq: 222.

241 Architectural Design U 5

Principles of perception, graphic communication, and form organization; composition in two and three dimensions.

Au, Wi Qtrs. 2 cl, 12 lab hrs. Open only to students enrolled in the School of Architecture.

242 Architectural Design U 5

Use of color in graphic communication and form organization; functional and aesthetic arrangement of physical objects.

Wi Qtr. 2 cl, 12 lab hrs. Prereq: 221 and 241.

243 Architectural Design U 5

Function and scale as factors in architectural design; expression and organization of spaces for human occupancy.

Sp Qtr. 2 cl, 12 lab hrs. Prereq: 242.

271 Drawing Studio for Architects and Landscape Architects U 3

Intensive drawing experience with basic forms and simple media; development of sensitivity to visual. Crane.

Au Qtr. 5 lab hrs. Open only to students enrolled in the School of Architecture.

272 Drawing Studio for Architects and Landscape Architects U 3

Continued intensive drawing experience; problems of increasing complexity; introduction of color, and of drawing the human figure. Crane.

Wi Qtr. 5 lab hrs. Prereq: 271.

273 Drawing Studio for Architects and Landscape Architects U 3

Continued intensive drawing experience; advanced drawing problems incorporating techniques and materials appropriate to professional study of architecture and landscape architecture. Crane.

Sp Qtr. 5 lab hrs. Prereq: 272.

293 Individual Studies in Architecture U 1-5

For students not majoring in arch who desire to pursue special studies in the field of architecture.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of school. Repeatable to a maximum of 15 cr hrs.

294 Group Studies in Architecture U 1-5

For students not majoring in arch who desire to pursue special studies in the field of architecture.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of school. Repeatable to a maximum of 15 cr hrs.

300 Outlines of Architecture U 3

Introduction to architecture; emphasis on twentieth century architectural thought, relationship of architecture to other environmental professions.

Au Qtr. 3 cl.

321 Wood and Masonry Construction U 3

Building loads; wood structural elements and their connections; masonry construction principles and procedures; foundations and footings; exercises in structural detailing and computations.

Au Qtr. 3 cl. Prereq: 223 and Eng Mech 206.

322 Steel and Concrete Construction U 3

Steel structural elements and their connections; trusses; reinforced concrete structural elements; exercises in structural detailing and computations.

Wi Qtr. 3 cl. Prereq: 223 and Eng Mech 206.

323 Application of Construction Principles U 3

Lectures, discussions, and field investigations of construction procedures; specifications; scheduling and estimating; site improvements.

Sp Qtr. 3 cl. Prereq: 322.

341 Architectural Design U 5

Influence of the nature of materials and of technology on the design of objects, furnishings, and major architectural elements.

Au Qtr. 2 cl, 12 lab hrs. Prereq: 243.

342 Architectural Design U 5

Design of the building envelope; integration of interior spaces and exterior form and expression.

Wi Qtr. 2 cl, 12 lab hrs. Prereq: 341.

343 Architectural Design U 5

Architectural expression of diverse and complex activities; relation of structure to spatial organization; expression of function and meaning in the building.

Sp Qtr. 2 cl, 12 lab hrs. Prereq: 342.

441 Architectural Design U 5

Site design; environmental influences on building form and location; vehicular circulation; building groups.

Au Qtr. 2 cl, 12 lab hrs. Prereq: 343.

442 Architectural Design U 5

Design of a major building emphasizing the integration of the functional, technical, and aesthetic aspects of design with particular attention to structure, environmental control, and mechanical circulation.

Wi Qtr. 2 cl, 12 lab hrs. Prereq: 343.

443 Architectural Design U 5

Recognition of community forces affecting architectural form; expression of social and cultural values; integration of new buildings with existing neighborhoods; selection among competing design values.

Sp Qtr. 2 cl, 12 lab hrs. Prereq: 343.

601 History of Ancient Architecture U 3

Analysis of primitive structures and ancient architecture before the Christian era to illustrate basic principles of shelter, natural building techniques, and organization of space.

Au Qtr. 3 cl.

602 History of Medieval and Renaissance Architecture U 3

Analysis of architecture from the early Christian era through the Baroque, related to the spirit of the age, social organization, and increasing structural knowledge.

Wi Qtr. 3 cl.

603 History of Contemporary Architecture U 3

Analysis of architecture from the Industrial Revolution to the present, reflecting changes of society, fashion and architectural practice; new materials and structural techniques.

Sp Qtr. 3 cl.

604 History and Preservation of Nineteenth and Twentieth Century American Architecture U G 3

Investigation of 19th and 20th Century American architecture with emphasis upon issues of preservation and conservation.

Au Qtr. 3 cl. Prereq: Grad standing or 4th yr standing in the School of Architecture or permission of school.

605 Research Methods in Architectural History and Preservation U G 3

A survey of literary and physical research techniques in architectural history and preservation;

identification and recording of historic buildings; field work in inventory techniques.

Sp Qtr. 3 cl. Prereq: Grad standing, 4th yr standing in the School of Architecture, or permission of school.

661 Lighting and Electrical Equipment in Architecture U 3

Lighting fundamentals; light sources and their characteristics; lighting applications; electricity and electrical circuits; electrical materials and installation methods; exercises in design of electrical wiring.

Passe.

Au Qtr. 3 cl. Prereq: Physics 112.

662 Space Conditioning in Architecture U 3

Environmental comfort; heat loss and gain; principles of heating and cooling; space conditioning; heating by electricity. Passe.

Wi Qtr. 3 cl. Prereq: Physics 112.

663 Mechanical Systems in Architecture U 3

Air handling systems; district heating and cooling; fire protection; water and plumbing systems; principles of storm and sanitary drainage; waste treatment; cleaning and disposal systems.

Sp Qtr. 3 cl. Prereq: 662.

689 Inspection Trip U 2

Taken between winter and spring quarters; trip to inspect architects' offices and buildings in Ohio and neighboring states; written report required.

Sp Qtr. Prereq: Arch, or larch, 3rd or 4th yr standing.

693 Individual Studies in Architecture U G 1-5

For students majoring in arch desiring to pursue special studies not offered in the fixed curriculum.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of school. Repeatable to a maximum of 15 cr hrs.

694 Group Studies in Architecture U G 1-5

For students majoring in arch desiring to pursue special studies not offered in the fixed curriculum.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of school. Repeatable to a maximum of 15 cr hrs.

700 Allied Arts U G 3

Analysis of arts related to architecture and the expression of the nature of materials in architectural ornament, furniture and furnishings, and the garden. Borchers.

Au Qtr. 3 cl. Prereq: Arch 4th yr standing or admission to grad curriculum in arch or permission of instructor.

701 Theory of Architecture U G 3

Examination of the principles of architectural design as stated by architects and others against the functioning of actual buildings and building groups.

Wi Qtr. 3 cl. Prereq: Admission to grad curriculum in arch or permission of instructor.

721* Architecture Acoustics U G 3

The geometry of architectural design for good acoustics within auditoria, lecture rooms, music rooms, churches, etc., where hearing is important.

Sp Qtr. 3 cl. Prereq: Admission to grad curriculum in arch or permission of instructor.

722* Introduction to Architecture Photogrammetry U G 3

An introduction to the geometry of central projection and to methods of gaining architectural manual data for photography.

Sp Qtr. 3 cl. Prereq: Admission to grad curriculum in arch or permission of instructor.

724 Structural Design in Architecture U G 5

Steel structural systems; analysis and design of components by current specifications; inelastic behavior of continuous frames; connections and fabrication limitations. Korda.

Wi Qtr. 5 cl. Prereq: Admission to grad curriculum in arch or permission of instructor.

725 Structural Design in Architecture U G 5

Reinforced concrete structural systems analysis and design of continuous frameworks by ultimate strength specifications, including deformations; prestressed concrete systems. Korda.

Sp Qtr. 5 cl. Prereq: 724.

751 Practice of the Design Professions U G 3

History of professions and their clients; the professional's interaction with society and government substantive aspects of practice, including organization and communication; legal aspects of construction.

Au Qtr. 3 cl. Prereq: Admission to grad curriculum in arch or permission of instructor.

752 Practice of the Design Professions U G 3

Management of construction contracts; bonds and insurance; operational procedures during negotiation and construction phases; arbitration; office and project case studies.

Wi Qtr. 3 cl. Prereq: Admission to grad curriculum in arch or permission of instructor.

801 Seminar G 2

Seminars and related research on contemporary problems, issues, and concerns in architectural theory and practice.

Au Qtr. 2 cl. Prereq: Admission to grad curriculum in arch or permission of instructor.

802 Seminar G 2

Continuation of 801.

Wi Qtr. 2 cl. Prereq: Admission to grad curriculum in arch or permission of instructor.

803 Seminar G 2

Continuation of 802.

Sp Qtr. 2 cl. Prereq: Admission to grad curriculum in arch or permission of instructor.

831 Construction Systems Design G 5

Comparative study of the behavior of construction systems; properties and specifications of systems materials; interface consequences of complex assemblies; industrialized buildings.

Au, Wi, Sp Qtrs. 3 cl, 12 lab hrs. Prereq: Admission to grad curriculum in arch or permission of instructor.

832 Construction Systems Design G 5

Methodology of design programming processes for solving complex functional relationships; design decision-making and management tools; network planning and scheduling; communication.

Au, Wi, Sp Qtrs. 3 cl, 10 lab hrs. Prereq: 831.

833 Construction Systems Design G 5

Systems product and component development;

dynamic, major institutional or industrial project; structural modeling.

Au, Wi, Sp Qtrs. 3 cl, 12 lab hrs. Prereq: 832.

834 Advanced Construction Systems Design G 5

Sub-systems design at building scale; detailed behavior considerations of structure, enclosure, comfort and safety sub-systems.

Au, Wi, Sp Qtrs. 3 cl, 12 lab hrs. Prereq: 833.

835 Advanced Construction Systems Design G 5

Production as design feedback, materials handling, processing, assembly, distribution and installation; macrosystems, utilities, transportation.

Au, Wi, Sp Qtrs. 3 cl, 12 lab hrs. Prereq: 834.

836 Advanced Construction Systems Design G 5

Obligations to systems users, society and the environment; optimization, economic justification; summary project of urban proportions.

Au, Wi, Sp Qtrs. 3 cl, 10 lab hrs. Prereq: 835.

841 Advanced Architectural Design G 5

Studies in design methods stressing coordination and expression of technical requirements, human needs and values, and aesthetic qualities; application in architectural projects of considerable complexity and scope.

Au Wi, Sp Qtrs. 15 lab hrs. Prereq: Admission to grad curriculum in arch or permission of graduate committee.

842 Advanced Architectural Design G 5

Continuation of 841; development of projects requiring a high level of aesthetic attainment.

Au, Wi, Sp Qtrs. 15 lab hrs.

843 Advanced Architectural Design G 5

Continuation of 842; design of projects requiring integration with other disciplines.

Au, Wi, Sp Qtrs. 15 lab hrs. Prereq: 842.

844 Advanced Architectural Design G 5

Advanced studies and individual research; development of independent design projects.

Au, Wi, Sp Qtrs. 15 lab hrs. Prereq: 15 cr hrs in grad arch design. Repeatable to a maximum of 15 cr hrs.

893 Individual Studies in Architecture G 1-5

Au, Wi, Sp Qtrs. Prereq: Grad standing. Repeatable to a maximum of 15 cr hrs.

894 Group Studies in Architecture G 1-5

Au, Wi, Sp Qtrs. Prereq: Grad standing. Repeatable to a maximum of 15 cr hrs.

899 Interdepartmental Seminar G 1-15

See Interdepartmental Seminars.

Su, Au, Wi, Sp Qtrs.

999 Research in Architecture G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

Art

Office: 146 Hopkins Hall, 128 North Oval Mall,
422-5072

170 Studio Art I U 5

An introductory studio experience relating to visual fundamentals; lectures, discussions, demonstrations, and field trips.

Au, Wi, Sp Qtrs. 1 cl, 5 2-hr labs. Open only to majors in art, art educ, ind dsgn, and hist art, and to majors in med ilus, by permission of chairman.

171 Studio Art II U 5

Continued studio experience of the underlying principles utilized in 170; lectures, discussions, demonstrations, and field trips.

Su, Au, Wi, Sp Qtrs. 5 2-hr labs. Prereq: 170 or permission of instructor.

175 Studio Art III U 5

Continued studio experience emphasizing visual fundamentals utilized in 170 and 171 as applied to diverse art forms; lectures, discussions, demonstrations, and field trips.

Au, Wi, Sp Qtrs. 5 2-hr labs. Prereq: 171.

180 Sculpture U 5

An investigation of the principles of sculpture, emphasizing basic forming processes and materials.

Su, Au, Wi, Sp Qtrs. Open only to majors in art, art educ, ind dsgn, hist art, and to majors in med ilus, by written permission of the chairman. Not open to students with credit for 581.

190 Introduction to Fine Art Activities U 3

An introduction to the principles of sculpture, development, and use through studio experience.

Su, Au, Wi, Sp Qtrs. 1 cl, 4 lab hrs. Not open to candidates for the degrees BFA and BS in Educ with art, ind dsgn, or hist art as a major nor to students with credit for 170 or 290.

240 Fundamentals of Ceramic Art U 3

Introduction to the art phases of the ceramic field; laboratory practice in the hand forming process.

Su, Au, Wi, Sp Qtrs. 1 cl, 6 lab hrs.

242 Introduction to Ceramic Art U 3

Introduction to the ceramic arts through the use of the potter's wheel with lectures covering a broad survey of the field of ceramics.

Su, Au, Wi, Sp Qtrs. 1 cl, 6 lab hrs. Prereq: 240 or majors in art, art educ, ind dsgn, or hist art.

244 Ceramic Art Laboratory I U 3

Laboratory practice utilizing the potter's wheel as a basis for more involved forming processes.

Su, Au, Wi, Sp Qtrs. 9 lab hrs. Prereq: 242 or permission of instructor.

245 Ceramic Art Laboratory II U 5

Laboratory practice in designing ceramic wares with emphasis on the hand forming processes.

Au, Wi, Sp Qtrs. 15 lab hrs. Prereq: 244 or permission of instructor.

246 Ceramic Art Laboratory III U 3

Sp Qtr. 9 lab. hrs. Prereq: 245 or permission of instructor.

272 Life Drawing I U 5

Drawing from the human figure; discussion of

drawing as related to significant traditions; lectures, demonstrations.

Su, Au, Wi, Sp Qtrs. 5 3-hr labs. Prereq: 175.

273 Painting I U 5

Introductory painting emphasizing fundamentals and their utilization as a basis for individual development; student initially works from still life; subsequent projects increase in complexity.

Su, Au, Wi, Sp Qtrs. 5 3-hr labs. Prereq: 175.

274 Studio Art IV U 5

An intermediate level drawing-color experience exploring a variety of media and directions; lectures, discussions, demonstrations.

Au, Wi, Sp Qtrs. 5 3-hr labs. Prereq: 272.

276† Introduction to Printmaking U 5

The basic tools, methods, and materials of printmaking; study and examination of original prints.

Su, Au, Wi, Sp Qtrs. 5 2-hr labs. Prereq: 171.

280 Construction Sculpture U 5

Study of three-dimensional form through the use of power and hand tools.

Au, Wi, Sp Qtrs. 3 3-hr labs, 6 hrs arr. Prereq: 175, 180, or equiv with written permission of instructor.

281 Modeling and Plastics Casting U 5

An intermediate studio course in sculpture, emphasizing modeled and constructed forms utilizing fiberglass; other materials and related processes may be explored.

Sp Qtr. 3 3-hr labs, 6 hrs arr. Prereq: 180.

282 Life Sculpture U 5

Aspects of the human form studied in relation to the materials of sculpture; experimentation in a choice of materials: clay, wax, cement, plaster, and metal.

Au, Wi Qtrs. 3 3-hr labs, 6 hrs arr. Prereq: 175, 180, 272, or equiv with written permission of instructor.

290 Fundamentals of Art U 5

An introduction to art through studio experience, exploring two-dimensional and three-dimensional media, by an analysis of form, and expression.

Su, Au, Wi, Sp Qtrs. 5 2-hr labs. Not open to majors in art, art educ, ind dsgn, or hist art.

293† Individual Studies U 2-5

Preliminary studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

293.09 Drawing

293.10 Painting

294† Group Studies U 5

Group studies for students in specialized programs.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 15 cr hrs.

376 Beginning Relief Printmaking U 5

Introduction to the practice and examination of several modes of artistic expression in the relief processes of printmaking.

Au, Wi Qtrs. 5 2-hr cl, 5 hrs arr. Prereq: 276. Open only to art or art educ majors or by permission of chairman.

377 Beginning Serigraphy U 5

Introduction to the practice and examination of several modes of artistic expression in the serigraphic processes of printmaking.

Au, Sp Qtrs. 5 2-hr cl, 5 hrs arr. Prereq: 276. Open only to art or art educ majors or by permission of chairman.

378 Beginning Intaglio Printmaking U 5

Introduction to practice and examination of several modes of artistic expression in the intaglio processes of printmaking.

Au, Sp Qtrs. 5 2-hr cl, 5 hrs arr. Prereq: 276. Open only to art or art educ majors or by permission of chairman.

379 Beginning Lithography U 5

Introduction to the practice and examination of several modes of artistic expression in the lithographic processes of printmaking.

Au, Wi Qtrs. 5 2-hr cl, 5 hrs arr. Prereq: 276. Open only to art or art educ majors or by permission of chairman.

441 Ceramic Composition U 3

Ceramic computations course for art students; methods of representing ceramic composition; laboratory study and discussion of raw materials and their uses in bodies and glazes.

Au Qtr. 2 cl, 2 2-hr labs.

442 Ceramic Composition U 3

Laboratory practice in development of the aesthetic aspects of ceramic glazes and bodies; methods of presetting their fired composition and correction faults.

Wi Qtr. 2 cl, 2 2-hr labs. Prereq: 441.

443† Ceramic Composition U 3 2/7

Laboratory study and development of individual projects leading to creation of ceramic compositions of aesthetic merit; further studies in texture and color.

Sp Qtr. 2 cl, 2 2-hr labs. Prereq: 442.

468 Elements of Weaving U 5

An introduction to the creative and functional aspects of handweaving; experience in the construction, warping, threading, and the manipulation of both standard and modern design techniques.

Au, Wi, Sp Qtrs. 5 2-hr labs. Prereq: 171 or 290 or equiv with written permission of instructor.

469† Weaving U 3 2/7

The use of weaving materials and equipment, with an emphasis on creative design of functional and decorative fabrics.

Au, Wi, Sp Qtrs. 3 2-hr labs. Prereq: 468.

560 Expanded Arts Studio U 5

An exploration of group experiences in expanded arts through the encouragement of integrative art activity in a studio situation.

Wi Qtr. 5 2-hr cl, 5 hrs arr. Prereq: Jr standing and permission of instructor.

570 Life Drawing II U 5

Advanced drawing problems utilizing life model, various media; observing and translating figure and environment as related elements in pictorial organization; outside assignments involving figure groups.

Su, Au, Wi, Sp Qtrs. 5 3-hr labs. Prereq: 272.

573 Painting II U 5

Figure painting, utilizing life and costumed models; advanced problems involving figure groups without models; drawing in black and white to emphasize form and value relationships.

Su, Au, Wi, Sp Qtrs. 5 3-hr labs. Prereq: 272 and 273.

581 Welded and Forged Sculpture U G 5

An introduction to metal construction in sculpture by oxyacetylene welding, arc welding, and forming methods with forge and hammer.

Sp Qtr. 3 3-hr labs, 6 hrs arr. Prereq: 280, 281, or equiv with written permission of instructor.

582 Sculpture Foundry U G 5

An introduction to traditional and experimental methods used in the development and casting of sculpture; experience in the operation of foundry material and equipment.

Au Qtr. 3 3-hr labs, 6 hrs arr. Prereq: 280, 281, 282, or equiv with written permission of instructor.

583 Plexiglass Sculpture U G 5

Black.

Wi Qtr. 3 3-hr labs, 6 hrs arr. Prereq: 280 or written permission of instructor.

591 Studio Practice I U 2-5

Intermediate studio practice, following and continuing the basic program of courses undertaken in the first two years.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. The following decimal subdivisions, with the exception of 591.12, are open only to jrs and srs majoring in art. Each decimal subdivision repeatable to a maximum of 20 cr hrs.

591.03 Ceramics

591.06 Graphics

591.07 Weaving

591.09 Drawing

591.10 Painting

591.11 Sculpture

591.12 Expanded Arts

640 Studio Kilns and Firing Practices U G 5

Design, construction, and use of simple gas and electric ceramic studio kilns; practice in the various types and methods of firing.

Sp Qtr. 15 lab hrs. Prereq: Permission of instructor.

641 Ceramic Reproduction Processes U G 5

Studies in the designing, fabrication and uses of models and molds in such multiple ceramic production processes as casting, jiggering, and pressing.

Wi Qtr. 15 lab hrs. Prereq: Permission of instructor.

642 Advanced Ceramic Laboratory U G 5

Design and construction of large ceramic art forms.

Au Qtr. 15 lab hrs. Prereq: Permission of instructor.

647 Survey of Ceramic Form and Technique U G 3

Slide lectures; designed specifically to give the student potter an understanding of historical forms and technical processes; presented in chronological sequence.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

668 Advanced Weaving U G 3-5

Group investigation of technical aspects of loom weaving with emphasis on individual expression and creativity; basic hand spinning processes explored. Creager.

Au, Wi, Sp Qtrs. 9 to 15 lab hrs, arr. Prereq: 468 and written permission of instructor. Open only to majors in art and art educ.

670 Special Problems in Drawing I U G 5

Special problems in drawing, utilizing a wide range of media and methods and exploring a variety of materials in experimental approaches to drawing.

Au, Wi, Sp Qtrs. 5 3-hr labs. Prereq: 272.

672 Special Problems in Drawing II U G 5

Problems in drawing from traditional figurative styles and media to examination of current direction; technical studies, and diverse media; emphasis on expanding drawing concepts.

Su, Au, Wi, Sp Qtrs. 5 2-hr labs, 5 hrs arr. Prereq: 670 or equiv with written permission of instructor. Repeatable to a maximum of 15 cr hrs.

673 Special Problems in Painting U G 5

Research problems in painting with emphasis upon current directions, new media and techniques; lectures, discussions and field trips.

Su, Au, Wi, Sp Qtrs. 5 2-hr labs, 5 hrs arr. Prereq: 573 or written permission of instructor. Repeatable to a maximum of 20 cr hrs.

676 Advanced Relief Printmaking U G 5

An intensive exploration of the relief processes as a means for individual expression.

Sp Qtr. 5 3-hr cl. Prereq: 376. Open only to art or art educ majors or by permission of chairman.

677 Advanced Serigraphy U G 5

An intensive exploration of the serigraphic processes as a means for individual expression.

Wi Qtr. 33-hr labs, 6 hrs arr. Prereq: 377 or permission of chairman. Open to grad students with 15 cr hrs in drawing and painting.

678 Advanced Intaglio U G 5

An intensive exploration of the intaglio process as a means for individual expression.

Au Qtr. 33-hr labs, 6 hrs arr. Prereq: 378 or permission of chairman. Open to grad students with 15 cr hrs in drawing and painting.

679 Advanced Lithography U G 5

An intensive exploration of the lithographic processes as a means for individual expression.

Sp Qtr. 5 3-hr cl. Prereq: 379 or permission of chairman.

680† Large Sculpture Projects U G 5

An advanced level studio course dealing with large-scale sculpture constructed in relation to architecture.

Sp Qtr. 5 3-hr labs. Prereq: 280 and 281.

681 Advanced Figurative Sculpture U G 5

An advanced level studio course dealing with individual study of the relationship of sculpture to the model; various media.

Au, Wi Qtrs. 33-hr labs, 6 hrs arr. Prereq: 281 and 282.

686 Photomechanical Printmaking U G 5

Designed to introduce the technology of photomechanical reproduction utilized by the printing industry as a tool to be used by the printmaking student.

Au, Wi, Sp Qtrs. 2 2½-hr labs; 2 1-hr labs arr; 8 hrs arr. Prereq: 276 or 377 or 378 or 379 and written permission of instructor. Repeatable to a maximum of 15 cr hrs.

691 Studio Practice II U G 2-5

Advanced studio practice beyond 591.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. The following decimal subdivisions, with the exception of 691.12, are open only to grad students or seniors majoring in art. Each decimal subdivision repeatable to a maximum of 20 cr hrs.

691.03 Ceramics**691.06 Graphics****691.07 Weaving****691.09 Drawing****691.10 Painting****691.11 Sculpture****691.12 Expanded Arts****693 Individual Studies U G 2-5**

Advanced study for students in specialized programs.

Prereq: Permission of instructor. Each decimal subdivision repeatable to a maximum of 45 cr hrs.

693.03 Ceramics

Su, Au, Wi, Sp Qtrs.

693.06 Graphics

Su, Au, Wi, Sp Qtrs.

693.07 Weaving

Au, Wi, Sp Qtrs.

693.09 Drawing

Su, Au, Wi, Sp Qtrs.

693.10 Painting

Su, Au, Wi, Sp Qtrs.

693.11 Sculpture

Su, Au, Wi, Sp Qtrs.

693.12 Expanded Arts

Su, Au, Wi, Sp Qtrs.

694 Group Studies U G 2-5

Group studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Each decimal subdivision repeatable to a maximum of 15 cr hrs.

694.03 Ceramics**694.06 Graphics****694.07 Weaving****694.09 Drawing****694.10 Painting****694.11 Sculpture****694.12 Expanded Arts****695† Professional Problems and Issues for Studio Artists I U G 2**

A seminar dealing with teaching disciplines and research specializations of studio faculty and faculty from related areas of study.

Au Qtr. 1 2-hr cl.

696† Professional Problems and Issues for Studio Artists II U G 2

Current events, directions, and movements in art.

Sp Qtr. 1 2-hr cl.

698 Study Tour in Art U G 5-15

First hand investigation of source material to be found abroad; including meetings and discussions with international members of the art community.

Au, Wi, Sp Qtrs. Prereq: 175 and 180 or permission of instructor.

881† Advanced Sculpture G 3-5

Advanced sculpture with a wide range of choice in media.

Au Qtr.

885† Advanced Sculpture G 3-5

Continuation of 881.

Wi Qtr. Prereq: 881.

887† Advanced Sculpture G 3-5

Continuation of 885.

Sp Qtr. Prereq: 885.

891 Studio Practice III G 2-5

Graduate-level studio practice.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing in art or permission of instructor. Each decimal subdivision repeatable to a maximum of 45 cr hrs.

- 891.03 Ceramics
- 891.06 Graphics
- 891.09 Drawing
- 891.10 Painting
- 891.11 Sculpture
- 891.12 Expanded Arts

893 Individual Studies G 1-5

Su, Au, Wi, Sp Qtrs. Each decimal subdivision repeatable to a maximum of 45 cr hrs.

- 893.03 Ceramics
- 893.06 Graphics
- 893.10 Painting
- 893.11 Sculpture
- 893.12 Expanded Arts

894 Group Studies G 1-5

Group studies for students in specialized programs.

Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Each decimal subdivision repeatable to a maximum of 15 cr hrs.

- 894.03 Ceramics
- 894.06 Graphics
- 894.10 Painting
- 894.11 Sculpture
- 894.12 Expanded Arts

940† Research Problems in Ceramics G 3-5

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 45 cr hrs.

971† Research Problems in Printmaking G 3-5

Au, Wi, Sp Qtrs. Repeatable to a maximum of 45 cr hrs.

980† Research Problems in Sculpture G 3-5

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 45 cr hrs.

991 Studio Practice IV G 2-5

Advanced graduate studio practice.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing in art or permission of instructor. Each decimal subdivision repeatable to a maximum of 45 cr hrs.

- 991.03 Ceramics
- 991.06 Graphics
- 991.09 Drawing
- 991.10 Painting
- 991.11 Sculpture
- 991.12 Expanded Arts

999 Research in Art G Arr

Research for thesis and dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Art Education

Office: 340 Hopkins Hall, 128 North Oval Mall, 422-7183

200 Orientation to Art Education U 4

Art education career potential is explored through

field experiences and investigation of its history, theory and issues.

Au, Wi, Sp Qtrs. 2 cl, 2 2-hr labs. Prereq: 2nd yr standing.

250 Beginning Jewelry and Metalsmithing U 3

Fundamental knowledge of and processes for manipulating metals for the design and creation of jewelry and metalwork. Duncan.

Au, Wi, Sp Qtrs. 3 2-hr cl, 3 hrs arr. Not open to students with credit for 210. Repeatable to a maximum of 9 cr hrs.

401 Laboratory and Field Experience in Art Education U 5

Laboratory problems for the teaching of art studio criticism and history; supervised field experience as teacher aide in an elementary school. MacGregor and Degge.

Au, Wi Qtrs. 5 3-hr labs. Prereq: 200, EDP standing, and successful completion of 5 studio courses.

402 Laboratory and Field Experience in Art Education U 5

Laboratory problems for teaching of art studio criticism and history; supervised field experience in recreation centers or settlement houses. MacGregor and Degge.

Wi, Sp Qtrs. 5 3-hr labs. Prereq: 401.

440 Graphic Communication Techniques for Art Teachers U 3

Projects, discussions and readings dealing with the design and symbolic use of letters and their relationship with other images toward communicating ideas in an educational context. Barrett.

Au Qtr. 3 2-hr labs.

450 Intermediate Jewelry and Metalsmithing U 3

Development of skills in manipulating metals and in using processes and techniques of metal forming and embellishment for jewelry and metalwork design and construction. Duncan.

Wi, Sp Qtrs. 3 2-hr labs, 3 hrs arr. Prereq: 6 cr hrs of 250 or permission of instructor. Repeatable to a maximum of 9 cr hrs.

493 Individual Studies U 1-5

Individual studies and project work in specified problems of the field of art education.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

494 Group Studies U 1-5

Group studies in professional areas of specified content.

Su, Au, Wi, Sp Qtrs. Prereq: 200 or written permission of instructor. Repeatable to a maximum of 20 cr hrs.

500 Art for Elementary Teachers U 3

Problems of teaching in terms of personal knowledge about art, insight into children's art work, and understanding of elementary school curriculum.

Su, Au, Wi, Sp Qtrs. 3 2-hr labs. Prereq: Art 290.

501 Art Workshop for Elementary Teachers U G 4

Laboratory experiences with art media toward understanding the visual arts; study of children's art expression; problems of teaching the arts in the elementary school program.

Su Qtr. Prereq: Elem Ed 4th yr standing. Full time of student for 3 wks.

586 Student Teaching in Art in Elementary Schools U 3-8

Practical and theoretical study in educational settings working with elementary school-age children and cooperating teachers.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs.

587 Student Teaching in Art in Secondary Schools U 3-8

Practical and theoretical study in educational settings working with secondary school-age students and cooperating teachers.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs.

595 Seminar on Topical Issues in Art Education I U 1-5

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 200 or 500. Repeatable to a maximum of 15 cr hrs.

603 Theory of Art Education U G 4

A consideration of the formal and informal theories in art education, with emphasis on building a theoretical basis for education in the arts.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 402, Ed: C&F 435, and Ed: E&MC 461.

604 Multi-Media Materials Development for Art Education U G 3-5

Development and presentation of instructional packages for art education; practical audio-visual instruction and theory of teaching materials development in the context of a multi-media laboratory. Linehan and Barrett.

Su, Au, Wi, Sp Qtrs.

605 Advanced Multi-Media Materials for Art Education U G 3-5

Development and presentation by advanced students of instructional packages for art education; emphasis is placed on design and revision of previously designed materials. Linehan and Barrett.

Wi, Sp Qtrs. Lec/lab. Prereq: 604 or permission of instructor.

635 Photographic Criticism U G 3

Readings, lectures, and discussions dealing with the study and practice of photographic criticism to facilitate and enrich the understanding of criticism and photography. Barrett.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 604 or Photog 506 or 521, or permission of instructor. Not open to students with credit for Photog 635. Cross-listed in the Dept of Photog.

650 Advanced Jewelry and Metalsmithing U G 3

Extends the skills in manipulating metals and the concepts of designing and executing jewelry and metalwork. Duncan.

Au, Sp Qtrs. 3 2-hr cl, 3 hrs arr. Prereq: 6 cr hrs of 450 or permission of instructor. Not open to students with credit for 610. Repeatable to a maximum of 9 cr hrs.

660 Film Art in Education U G 3

A study of the development and aesthetic qualities of the short, experimental film and its potential use in an educational context.

Au, Wi, Sp Qtrs. 4 cl. Prereq: Written permission of instructor.

691 Applied Research in Art Education U G 2-5

Studies in empirical, philosophical, curriculum or studio problems in art education.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs.

693 Individual Studies U G 2-5

Advanced study for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 45 cr hrs.

694 Group Studies U G 2-5

Group studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

720 Philosophy of Art Education Literature Survey U G 3

Writings by art educators, aestheticians, artists, critics, and others are discussed for historical perspective on and to distinguish the nature of philosophy of art education. Norris.

Au Qtr. 3 cl.

731 Evaluation in Art Education U G 3-5

Evaluation of student performance in art; informal instruments for collecting data for use in assessing programs. Efland.

Su Qtr. 2 2-hr cl. Prereq: 807 or equiv with written permission of instructor.

732* The Textbook as a Resource in Art Education U G 3-5

Critical examination of art education textbooks currently in use and their impact upon professional practices. Efland.

Su Qtr. Prereq: Written permission of instructor.

760* Art Criticism in Art Education U G 3

An examination of methods of art criticism and the application of these methods to the classroom situation. Arnold.

Sp Qtr. Prereq: 804 or permission of instructor.

765 Contemporary Art and Art Education U G 3

A study of recent developments in contemporary art and the implication of those developments on art education practice and curriculum design. Arnold.

Wi Qtr. 4 cl. Prereq: Written permission of instructor.

776 Workshop in Art Education U G 1-5

Small group demonstrations of trends, processes and teaching materials for curriculum development in art education; preparation of study materials for teaching art.

Su, Au, Wi, Sp Qtrs. Prereq: 603 or equiv and permission of instructor. Repeatable to a maximum of 15 cr hrs.

795 Seminar on Topical Issues in Art Education II U G 1-5

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 15 cr hrs in art educ or permission of dept. Repeatable to a maximum of 15 cr hrs.

801 Faculty Symposium G 2

Formal presentations by faculty members on current issues for formal response and general discussion.

Au Qtr. Repeatable to a maximum of 6 cr hrs.

802 Interdisciplinary Seminar G 2

Wi, Sp Qtrs. Repeatable to a maximum of 6 cr hrs.

804 Issues in Art Education G 3-5

An introduction to alternative conceptions of the functions of art education within the context of general education and the contemporary culture milieu.

Su, Au Qtrs.

**805 Empirical Problems in
Art Education G 3-5**

An introduction to the language, methodology, and application of empirical research in art education; the identification and isolation of appropriate empirical problems in the field.

Wi Qtr.

**807 Curriculum Problems in
Art Education G 3-5**

An examination of the functions of curricular plans as tools for transforming selected conceptions of art education into teacher and student activities in the classroom.

Sp Qtr.

**820* Problems in Philosophy of
Art Education G 3-5**

Sets of readings on instructor-selected topics of historical interest are discussed for the structure of their arguments and their art education practice implications. Norris.

Wi Qtr. Prereq: 720.

**821* Contemporary Philosophy and
Art Education G 3-5**

A brief survey of general and educational philosophy since around 1900; consideration of the application of contemporary philosophy to art education. Norris.

Sp Qtr. Prereq: Ed-C&F 640.73 or equiv.

**822 Seminar in Philosophy of
Art Education G 3**

Norris.

Su, Au, Wi, Sp Qtrs. Prereq: 821 or Ed-C&F 640.73 or equiv. Repeatable to a maximum of 12 cr hrs.

889 Internship in Art Teaching G 2-15

Supervised professional teaching experience toward certification for post-degree students and extended field work for graduate students.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

893 Individual Studies G 1-5

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 45 cr hrs.

894 Group Studies G 1-5

Group studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

**911 Research Problems in
Art Education G 3-5**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 45 cr hrs.

**998 Research in Art Education:
Thesis G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

**999 Research in Art Education:
Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Arts and Sciences

Office: 121 Denney Hall, 164 W 17th Avenue, 422-7226

100 Cultural Perspectives U 1

Selected cultural activities, including background preparation and development of a critical approach.

Au Qtr. Arr. Repeatable to a maximum of 3 cr hrs.

294 Interdisciplinary Group Studies U 3-5

Study of special or interdisciplinary topics at an introductory level.

H294 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: Open to students who meet instructor's stated prerequisites. Repeatable to a maximum of 15 cr hrs.

**694 Interdisciplinary Group
Studies U G 3-5**

Study of special or interdisciplinary topics at an intermediate level.

H694 (honors) may be available to students enrolled in an honors program or by written permission of dept. Prereq: Open to students who meet instructor's stated prerequisites. Repeatable to a maximum of 15 cr hrs.

**H750 Arts and Sciences—Graduate
Course U G 1-15**

A program of study leading to the simultaneous awarding of the bachelor's degree with the master's degree.

Su, Au, Wi, Sp Qtrs. Prereq: Sr standing and admission to the Arts and Sciences—Graduate Combined Program. Repeatable to a maximum not to exceed one-half of the total hours earned after admission to the program. Individual studies course graded S/U.

Arts, College of The

Office: 304 Mershon Auditorium, 30 West 15th Avenue, 422-5172

**160 Introduction to the Contemporary
Arts U 5**

A study of the role of the arts in American society based on live, recorded, and filmed performances and exhibitions.

Au, Wi, Sp Qtrs. 4 cl, 1 hr arr.

294 Group Studies U 1-5

Interdepartmental course involving studies in two or more areas of the visual and performing arts.

Prereq: Permission of dean. Repeatable to a maximum of 18 cr hrs.

693 Individual Studies U G 2-5

Advanced studies for students engaged in interdisciplinary investigations within the College of The Arts.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

694 Group Studies U G 1-5

Interdepartmental course involving studies in two or more areas of the visual and performing arts.

Prereq: Permission of dean. Repeatable to a maximum of 18 cr hrs.

Astronomy

Offices: 5040 Smith Laboratory of Physics, 174 West 18th Avenue, 422-1773; Perkins Observatory, Delaware, Ohio

150 Descriptive Astronomy U 5

Man's view of the nature of the physical universe, and the manner in which he arrived at that view; telescopes and planetarium may be used.

Su, Au, Wi, Sp Qtrs. Not open to students with cr for 101, 102, 191, or 192.

155 Current Topics in Astronomy U 5

A detailed study of several topics of current interest in the fields of astronomy, astrophysics, and cosmology, presented for non-science majors.

Au, Sp Qtrs. 5 cl. Prereq: 150 or 192 or written permission of instructor. Not recommended for students with a grade of below "C" in 150.

191 General Astronomy I U 5

Astronomy 191 and 192 form a comprehensive introduction to modern astronomy; 191 deals with the solar system and the earth as an astronomical body. Au Qtr. Lec/lab. Prereq or concur: Math 150 or equiv or permission of instructor. Not open to students with credit for 101 or 150.

192 General Astronomy II U 5

A continuation of 191 with emphasis on the stellar universe and physical astronomy.

Wi Qtr. Lec/lab. Prereq: 101 or 191 or permission of instructor. Not open to students with cr for 102 or 150.

294 Group Studies U 1-5

Special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

300†* Spherical Astronomy U 3

The application of spherical trigonometry to stellar positions and motions; stellar coordinate systems; time; fundamental measurements of star positions.

Sp Qtr. Lec/lab. Prereq: 101 or 150 or 191 or equiv; Math 254; and Physics 112 or 131 or 231; or permission of instructor. Not open to students with credit for 611.

301 Observational Astronomy U 3

Selected intermediate level experiments and observations for the obtaining and treatment of astronomical data.

Sp Qtr. Lec/lab. Prereq: 102 or 192 or written permission of instructor.

601†* History of Astronomy U G 3

Babylonian, Egyptian, Chinese, and Mayan astronomy; Greco-Roman period and Middle Ages; Renaissance and Reformation; modern trends in astronomy.

Wi Qtr. Prereq: 101 or 102 or 191 or 192 or 150 or permission of instructor.

605* Introduction to Celestial Mechanics U G 3

Application of the laws of motion to planets, satellites, and stars; the two-, three-, and N- body problems; introduction to orbit and perturbation theory.

Wi Qtr. Prereq: Math 255 or 556.01 or 556, and Physics 525; or permission of instructor.

650 Stellar Astronomy U G 4

Distances, motions, luminosities, and masses of stars; the motions and distribution of stars and interstellar

matter; star clusters and galaxies.

Au Qtr. Prereq: 102 or 192 or 150; Math 254; Physics 232 and 233, or 132 and 133; or permission of instructor.

651 Introduction to Astrophysics U G 4

Study of radiation from stars and nebulae to determine the composition and physical conditions of matter in and between the stars; stellar nuclear energy sources.

Wi Qtr. Prereq: Math 255 or 556.01 or 556; prereq or concur Physics 580.01 or 705; or equiv; or permission of instructor.

652 Solar System U G 4

The physical nature of the solar surface, planets, satellites, comets, asteroids, meteors, and diffuse matter in the solar system; cosmogony of the solar system.

Sp Qtr. Prereq: 101 or 191 or 150; and 651; or permission of instructor.

689* Astronomical Uses of Applied Mathematics U G 3

Application of numerical methods for solution of integral, differential, and linear equations of particular interest to astronomy; aspects of statistics of particular relevance to astronomy.

Au Qtr. Prereq: Math 255 or permission of instructor.

693 Individual Studies U G 1-15

Independent library or laboratory work on a special problem in observational or theoretical astronomy.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 40 cr hrs.

694 Group Studies U G 1-5

Special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

H783 Honors Course U 3-5

A program of study arranged for each student, with individual conferences, reports, and honors thesis.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the astron courses taken, with an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degree BA or BS *with distinction* in astron. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs.

785 Observational Techniques I U G 4

Photoelectric and photographic photometry.

Au Qtr. Prereq: 300 or 611, and 651, Physics 657, and 705; or permission of instructor.

786 Observational Techniques II U G 3

Observational spectroscopy.

Sp Qtr. Prereq: 785.

801 Astronomy Seminar I G 1

Seminars conducted on astronomical topics of current interest; students will participate actively in the presentation and discussion of materials.

Au Qtr. Prereq: 10 cr hrs each at 600-level or higher in astron, physics, and math; or permission of instructor. Repeatable to a maximum of 8 cr hrs.

802 Astronomy Seminar II G 1

Continuation of 801.

Wi Qtr. Prereq: 801. Repeatable to a maximum of 8 cr hrs.

803 Astronomy Seminar III G 1

Continuation of 802.

Sp Qtr. Prereq: 802. Repeatable to a maximum of 8 cr hrs.

831†* Single Stars I G 4

Theoretical aspects of the atmospheres, interiors, and evolution of single stars, including the sun.

Au Qtr. Prereq: 651, Physics 580.01 or 707, Math 551.01, and 255 or 556.01; or 556; or permission of instructor. Not open to students with credit for 822, 823, 851, or 852.

832†* Single Stars II G 4

Continuation of 831.

Wi Qtr. Prereq: 831 or permission of instructor. Not open to students with credit for 822, 823, 851, or 852.

833†* Single Stars III G 4

Continuation of 832.

Sp Qtr. Prereq: 832 or permission of instructor. Not open to students with credit for 822, 823, 851, or 852.

835†* Observed Properties of Stars I G 3

Discussion and interpretation of observations relating to fundamental parameters and atmospheric properties of stars.

Au Qtr. Prereq: 651, Physics 580.01 or 707; or permission of instructor. Not open to students with credit for 821.

836†* Observed Properties of Stars II G 3

Continuation of 835.

Wi Qtr. Prereq: 835 or permission of instructor. Not open to students with credit for 821.

837†* Observed Properties of Stars III G 3

Continuation of 836.

Sp Qtr. Prereq: 836 or permission of instructor. Not open to students with credit for 821.

850 Current Topics in Astronomy G 1-5

Staff members and visiting lecturers will present material on their current research problems.

Au, Wi, Sp Qtrs. Prereq: 10 cr hrs at 600-level or higher in each of astron, physics, and math; or permission of instructor. Repeatable to a maximum of 15 cr hrs.

862 Radio Astronomy I G 3

Fundamental theory of radio astronomy and interpretation of basic radio observations.

Wi Qtr. 3 cl. Prereq: 651 and Physics 656 or Elec Eng 810 or permission of instructor. Offered in cooperation with the Dept of Elec Eng.

863 Radio Astronomy II G 3

Advanced theory of generation, propagation and absorption of cosmic radio waves.

Sp Qtr. 3 cl. Prereq: 862 or permission of instructor. Offered in cooperation with the Dept of Elec Eng.

871* Stellar Systems and Interstellar Matter I G 5

Radio and optical observational and theoretical aspects of multiple star system dynamics, structure and statistics; interstellar gas and dust; external systems and cosmology.

Au Qtr. Prereq: 651, Physics 656 or Elec Eng 810, Stat 521 or Physics 780.20, Math 551.01, and 255 or 556.01; or 556; or permission of instructor. Not open to students with credit for 841, 842, 843, 853, or 863.

872* Stellar Systems and Interstellar Matter II G 5

Continuation of 871.

Wi Qtr. Prereq: 871 or permission of instructor. Not open to students with credit for 841, 842, 843, 853, or 863.

873* Stellar Systems and Interstellar Matter III G 5

Continuation of 872.

Sp Qtr. Prereq: 872 or permission of instructor. Not open to students with credit for 841, 842, 843, 853, or 863.

880 Directed Research G 3

Participation by the student in the research being conducted by a professor.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs only under supervision of different faculty members.

999 Research in Astronomy and Astrophysics G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Atmospheric Sciences

Office: 469 Electronics Laboratories, 2015 Neil Avenue, 422-0764

General Meteorology

See Physics 503—A description of weather phenomena and the physical processes underlying them; intended primarily for nonphysics majors.

Climatology

See Geog 520—The elements and the controls of climate; types of climate and their distribution; climates and their effects on the economic and other activities of man.

Air Pollution

See Chem Eng 571—Sources and dispersion of air pollutants, air pollution control, air quality criteria, emission standards and regulations.

Microclimatology and Radiation Climatology

See Geog 622.01—The theory of exchanges of energy and mass at the earth atmosphere interface as it relates to microclimates with particular emphasis upon radiation and climate.

Microclimatological Measurements

See Geog 622.02—Practical experience in the fabrication of instruments, deployment of measurement systems in the field and recording of data related to microclimates.

Synoptic Analysis and Forecasting

See Geog 623—Theory and practice in synoptic weather analysis and forecasting.

Chemistry of the Earth's Atmosphere

See Chem 678—Chemistry of upper and lower atmosphere; application of kinetics and thermodynamic principles to prediction of rates and mechanisms of transformations, and atmospheric pollutant control.

693 Individual Studies in Atmospheric Sciences U G 1-5

Independent studies on selected atmospheric sciences-related topics.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 18 cr hrs.

694 Group Studies in Atmospheric Sciences U G 1-5

Special studies on topics directly related to the atmospheric sciences.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

Simulation in Natural Resource Management

See Nat Res 701—Interactive aspects of natural resource & management, with particular respect to pollution problems, primarily through group involvement in a computer simulation.

Fundamentals of Atmospheric Fluid Dynamics

See Aero Eng 765—Advanced level treatment of basic topics in the dynamics and thermodynamics of atmospheric motion.

Dynamic Climatology

See Geog 821—Dynamics, thermodynamics, energy conservation, flows, conversion processes, large scale circulation patterns with particular emphasis upon turbulence at the synoptic scale's weather processes, and regional climates.

Microclimatology

See Geog 822—Radiation and turbulence processes, conduction; variation in wind, temperature, humidity, soil moisture, evaporation, soil temperature; influence of vegetation and artificial structures.

Applied Climatology

See Geog 823—Effects of climate upon plants and animals (bioclimatology), upon industrial processes and structures, and upon land forms; forecasting; climate modification.

881 Atmospheric Sciences Seminar G 2

A multidisciplinary seminar reviewing the state-of-the-art of selected topics in atmospheric sciences-related fields. Seliga.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

893 Individual Studies in Atmospheric Sciences G 1-5

Reviews the state-of-the-art of selected topics in the atmospheric sciences-related fields of meteorology and climatology, air environment studies, or aeronomy and solar-terrestrial relations. Seliga.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 18 cr hrs.

894 Group Studies in Atmospheric Sciences G 1-5

Advanced studies on topics directly related to the atmospheric sciences.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

999 Research in Atmospheric Sciences G Arr

Research for thesis or dissertation purpose only.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing in atmospheric sciences graduate program.

Aviation

Office: Ohio State University Airport, 3160 Case Road, 422-1116

111 Introduction to Aviation U 3

A comprehensive study of the nation's air transportation system.

Wi, Sp Qtrs. 3 cl.

201 Primary Flight U 3

A laboratory course provided for students to achieve greater understanding of 211.

Su, Au, Wi, Sp Qtrs. 5 lab. Prereq or concur: 211 and secure equipment usage charge and permission slip at University Airport prior to scheduling.

211 Elements of Aviation U 4

Problems in fundamentals of flight and aircraft operation; objective studies of aviation laws and regulations.

Su, Au, Wi, Sp Qtrs. 3 cl, 2 lab. Prereq: Math 116 and Physics 111; or equiv.

294 Group Studies in Aviation U 2-5

Su, Au, Wi, Sp Qtrs. Prereq: 3rd yr standing and written permission of instructor. Repeatable to a maximum of 10 cr hrs.

320 Aviation Weather U 3

Overview of weather theory; identification of aviation weather hazards and of methods for obtaining current weather data.

Wi Qtr. 1 3-hr cl.

401 Advanced Flight

Su, Au, Wi, Sp Qtrs. 5 lab. Prereq: 201 and secure equipment usage charge and permission slip at University Airport prior to scheduling. The student must register for specific studies in areas indicated below, and may register for more than one at a time. Repeatable to a maximum of 24 cr hrs; subdivisions repeatable.

401.01 Precision Flight Maneuvers I U 3

401.02 Precision Flight Maneuvers II U 3

401.03 Precision Flight Maneuvers III U 3

401.04 Flight Navigational Procedures U 4

401.05 Flight Instruction Procedures U 4

401.06 Advanced Performance Evaluation U 2

401.07 Instrument Instruction Procedures U 2

411 Aircraft Performance U 3

Studies of airframe components, performance and design characteristics, power plants, and federal certification of aircraft equipment.

Au, Sp Qtrs. 3 cl. Prereq: 211.

415 Air Traffic Control and Flight Meteorology U 3

Precision navigational techniques for position control, flight planning and cruise control, aids to navigation, fundamentals of meteorological analysis, and effects of weather on flight.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 211.

421 Flight Instruction Methodology U 3

Principles of teaching aeronautical subjects.

Wi Qtr. 1 3-hr cl. Prereq: 411 and 415 or equiv with written permission of instructor.

**451 Instrument Instruction
Methodology U 2**

Examines the principles of teaching instrument flight theory and requirements.

Sp Qtr. 1 2-hr cl. Prereq: 421.

493 Individual Studies in Aviation U 2-5

Su, Au, Wi, Sp Qtrs. Prereq: 3rd yr standing and written permission of instructor. Repeatable to a maximum of 10 cr hrs.

**519 Analysis of Problems in Aviation
Safety U G 3**

Detailed analysis of standard and proposed procedures relating to safety, studies in pilot behavior, accident investigation, and safety programs.

Sp Qtr. 3 cl. Prereq: 411 and 415. Not open to students with credit for 419.

**593 Individual Studies in
Aviation U G 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 10 cr hrs.

694 Group Studies in Aviation U G 2-5

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

Biochemistry

Office: 776 Biological Sciences Building, 484 West 12th Avenue, 422-6771

105 Molecular Basis of Life U 5

Introduction to the molecular processes underlying life, with applications to biological phenomena of social importance. Ross.

Sp Qtr. 5 cl. Prereq: High school chem. Not open to students with credit for Biophys 105. Recommended for nonscience majors.

211 Elements of Biochemistry U 5

A survey of important concepts in biochemistry stressing the qualitative rather than the quantitative view; suitable for students without an organic chemistry background. Serif and Snell.

Au, Sp Qtrs. 5 cl. Prereq: Chem 102 or 122. Credit does not count toward a major in biochem.

251 Man and His Food U 5

Integrated treatment of the biological, chemical, nutritional, economic, and cultural concepts basic to feeding the populations in developed and underdeveloped countries of the world. Deatherage.

Au, Sp Qtrs. 5 cl.

294 Group Studies U 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs for different subject matter only.

**511 Introduction to Biological
Chemistry U G 4**

An introductory course in biochemistry dealing with the molecular basis of structure and metabolism of plants, animals, and microorganisms. Behrman, Ives, Ross, and Snell.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: Chem 123 and 235 or 241, and 2 qtrs of biological sciences.

**512 Biochemistry of Physiological
Processes U G 4**

The biochemical basis for physiological processes in higher animals; topics will include digestion and absorption, respiration, blood function, kidney function and endocrine control. Moore.

Wi Qtr. 3 cl. Prereq: 511 or equiv; a course in physiol recommended.

**521 Introduction to Biological Chemistry:
Laboratory U G 5**

Laboratory work to accompany 511 or 613 or 614; assay techniques for chemical constituents and metabolic reactions of living cells. Gross, Johnson, and Snell.

Su, Au, Wi, Sp Qtrs. 2 cl, 23-hr labs. Prereq or concur: 511 or 613 or 614.

**551 Chemistry of Foods and Food
Processing U G 5**

The chemical, physical, and biological nature of foods in relation to handling, processing, packaging, quality, and consumer acceptance. Deatherage.

Wi Qtr. 3 cl, 23-hr labs. Prereq: Chem 211 and 235 or equiv.

611 Molecular Genetics U G 5

Molecular mechanisms of DNA replication, mutation, recombination, and repair; analysis of gene structure; metabolic and genetic control mechanisms; procaryotic and eucaryotic systems are analyzed. Marzluf and Perlman.

Sp Qtr. 5 cl. Prereq: One course in biochem and background in one or more of the following areas: genetics, micrbiol, dev biol; or permission of instructor. Not open to students with credit for Genetics 611. Cross-listed in Genetics.

**613 Biochemistry and Molecular
Biology U G 4**

An introductory course in biochemistry and molecular biology developing in two quarters the molecular basis of structure and function of life forms. Barber, Doskotch, and Ives.

Au Qtr. 4 cl. Prereq: Chem 242 or 253; 2 qtrs of biological sciences. Not open to students with credit for 511 without written permission of instructor. Not open to students with credit for 513.

**614 Biochemistry and Molecular
Biology U G 4**

Continuation of 613. Barber, Doskotch, and Ives.

Wi Qtr. 4 cl. Prereq: 613. Not open to students with credit for 511 without written permission of instructor. Not open to students with credit for 514.

693 Individual Studies U 2-5 G 2-10

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs for undergrad credit and to a maximum of 40 cr hrs for grad credit.

694 Group Studies U G 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

705 General Biological Chemistry U G 5

An intensive treatment of modern biochemistry; protein structure, enzyme-catalyzed reactions, chemistry and metabolism of carbohydrates. Barber, Means, and Royer.

Au Qtr. 3 cl. Prereq: 511 or equiv; Chem 242, 244 or 253, 254; physical chem background of kinetics and thermodynamics or written permission of instructor. Not open to students with credit for Physchem 705. Cross-listed in Physchem.

706 General Biological Chemistry Laboratory U G 5

Laboratory to accompany 705. Behrman.

Au Qtr. 2 4-hr labs. Prereq or concur: 705, 706, 708, and 710 should be taken in sequence.

707 General Biological Chemistry U G 5

An intensive treatment of modern biochemistry; energy utilization and electron transport, photosynthesis, membranes and lipid metabolism. Brierley, Gross, and Panganamala.

Wi Qtr. 3 cl. Prereq: 705 or Physchem 705. Not open to students with credit for Physchem 707. Cross-listed in Physchem.

708 General Biological Chemistry Laboratory U G 5

Laboratory to accompany 707. Means.

Wi Qtr. 2 4-hr labs. Prereq: 706.

709 General Biological Chemistry U G 5

An intensive treatment of modern biochemistry; intermediary metabolism of amino acids, proteins, and nucleic acids. Johnson, Richardson, and Webb. Sp Qtr. 3 cl. Prereq: 707 or Physchem 707. Not open to students with credit for Physchem 709. Cross-listed in Physchem.

710 General Biological Chemistry Laboratory U G 5

Laboratory to accompany 709.

Sp Qtr. 2 4-hr labs. Prereq: 708.

721 Physical Biochemistry U G 5

Au, Wi, Sp Qtrs. 5 cl.

721.01 Physical Biochemistry I

Introduction to chemical thermodynamics and statistical mechanics for students of biochemistry with emphasis on applications to systems of biological interest. Scott.

Prereq: 511 or 514 or 614, Math 255, Physics 133, and Chem 255, or equiv with written permission of instructor.

721.02 Physical Biochemistry II

A continuation of 721.01. Additional topics in thermodynamics, statistical mechanics and chemical kinetics, with applications to biochemistry. Scott.

Prereq: 721.01 or equiv with written permission of instructor.

721.04 Physical Biochemistry—Enzymes

Enzyme kinetics, chemical catalysis, determination of groups at the active site, mechanism of specific enzymes and theories on enzyme efficiency and specificity. Royer.

Prereq: 511 or 514 or 614, Chem 253 and 532, or equiv with written permission of instructor.

731* Molecular Photobiology U G 5

Gross.

Au Qtr. 3 cl. Prereq: 511 or 514 or 614, Chem 253 and 521, Physics 113 and Math 153.

731.01* Molecular Photobiology I

A comprehensive study of the photosynthetic process and photobiological origins of life.

731.02* Molecular Photobiology II

A molecular approach to contemporary photobiological reactions excluding photosynthesis.

H783 Honors Course U 3-5

A program of reading and research for each student with individual conferences, reports, and honors thesis.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing with a grade of A in at least half of the courses in biochem and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degrees BA or BS *with distinction* in biochem. A failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs.

785 Research Principles and Techniques U 2-5 G 2-10

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs for undergrad credit and a maximum of 40 cr hrs for grad credit.

811 Advanced Topics in Molecular Genetics G 3

An examination of the current research in molecular genetics by selective reading assignments and critical analysis during class discussion periods. Johnson, Marzluf, and Perlman.

Au Qtr. 3 hrs arr. Prereq: 611 or Genetics 611. Not open to students with credit for Genetics 811. Cross-listed in Genetics. Repeatable to a maximum of 6 cr hrs.

821†* Enzymes G 3

Advanced studies of enzymes and the mechanism of enzyme action. Royer.

Wi Qtr. 3 cl. Prereq: 709 or equiv.

850 Seminar in Biological Chemistry G 2

Au, Wi, Sp Qtrs. 1 or 2 cl. Repeatable to a maximum of 40 cr hrs.

999 Research in Biochemistry G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Biology

See courses in Biochemistry, Biophysics, Botany, Entomology, Genetics, Microbiology, and Zoology.

Bio-Medical Engineering

Office: 257 Dreese Laboratories, 2015 Neil Avenue, 422-6014

Engineering Properties of Biological Materials

See Agri Eng 425—Identification and measurement of the physical properties of agricultural materials relevant to the engineering of systems for their production, harvesting, handling, and classification.

Introduction to Biophysics

See Biophys 500—An introduction to the attitudes and principles which characterize the physico-chemical understanding of biological systems; examples of current biophysical research.

Bio-Medical Engineering Analysis for Non-Engineers

See Elec Eng 570—Basic concepts and techniques used in analyzing physical and bio-medical systems. Not open to students in College of Engineering.

Bio-Medical Engineering Electronics for Non-Engineers

See Elec Eng 571—Fundamentals of solid state electronics; applications to the life science field with emphasis on limitations and laboratory uses. Not open to students in College of Engineering.

Bio-Medical Engineering Systems for Non-Engineers

See Elec Eng 572—Continuation of 570; techniques for modeling and analyzing bio-medical systems, including control systems. Not open to students in College of Engineering.

Human Physiology for Bio-Medical Engineers

See Physiol 600—An introduction to the function of the major human organ systems and the medical aspects of engineering problems for bio-medical engineers.

Advanced Mammalian Physiology I

See Physiol 601—First of a two-quarter sequence presenting the following areas of physiology: neuromuscular, heart and circulation, endocrine, brain and special senses, body fluids and kidney, respiration, digestion, temperature control, and metabolism.

Advanced Mammalian Physiology II

See Physiol 602—Continuation of 601.

Sensory Psychophysics

See Biophys 607—Survey of psychophysical studies of sensory systems; variations in input energy and relationships between input and output under different operating conditions.

Computer Applications in the Biomedical Sciences

See Biostat 616—Introduction to computer programming languages such as Fortran, Algo, Cobol; packaged statistical programs; medical applications of computers differential diagnosis, radiation treatment dose planning, electrocardiogram analysis.

Introduction to Bio-Medical Engineering

See Elec Eng 670—Introduction to the engineering aspects of life science, utilizing lectures from engineering, medicine, and life science.

Bioceramics

See Ceram En 671—Evaluation and characterization of ceramic materials for medical applications.

Biological Fluid Mechanics for the Engineer

See Aero Eng 673—Study of pulsatile flows, low Reynolds number flows, turbulence, and separated flow phenomena as they pertain to biological systems and biomedical engineering applications.

Introduction to Design in Biomedical Engineering

See Mech Eng 687—Introduction of engineering students to design problems in biomedical engineering; analysis in biomechanics, bio-fluid mechanics, diffusion, and elementary physiology.

694 Group Studies in Bio-Medical Engineering U G 1-5

Provides groups of students opportunities to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

Man-Machine Interface

See Cptr/Inf Sc 712—Information continuity and system operation; information display and regulation; role and usage of operator in information acquisition and transmissions, automation, machine augmentation of operator function.

Radiation Biophysics

See Physiol 746—Stable and radioactive isotopes; biological effects of ionizing radiation.

Design of Biomedical Investigations

See Prev Med 764—Design of studies in biomedical area; formulation of hypotheses; sampling; planning observations and measurements; selection of statistical techniques; testing of hypotheses.

Biomechanics

See Eng Mech 770—Discrete mass and continuum mechanics; description of biological materials; biodynamics of limb and gross body motions; various models for injury to head, neck and torso.

Biological Control Systems

See Elec Eng 770—Application of electrical engineering to the analysis of biological control systems such as visual, muscular, thermal, and cardiovascular; receptor, nerve axon, and muscle transfer characteristics.

Bio-Medical Instrumentation

See Elec Eng 771—Application of electrical engineering to the instrumentation, monitoring, and signal and data handling in bio-electrical measurements; consideration of implants, heart pacers, electrocardiograms and electroencephalographs, and speech analysis.

Clinical Bio-Medical Instrumentation

See Elec Eng 772—Classroom and laboratory investigation of clinical instrumentation problems such as EEG, EKG, catheter measurements, spectral analysis, pacemakers, electrical safety.

Rheology of Fluids

See Chem Eng 775—Principles of rheology including the characteristics of non-Newtonian materials, measurements, rheological equations of state, viscometric flows, and applications to the flow of industrial materials.

Veterinary Physiology

See Vet Phys 790—Comparative electrocardiography.

Veterinary Physiology

See Vet Phys 791—Comparative hemodynamics and cardiovascular sound.

Veterinary Physiology

See Vet Phys 792—Advanced comparative cardiovascular physiology with emphasis upon circulatory response to stress of various congenital and acquired cardiovascular defects.

793 Individual Studies in Bio-Medical Engineering U G 1-12

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

Interdepartmental Seminar—Philosophy of Clinical Practice for Bio-Medical Engineers

See Medicine 797—Introduction to the physicians philosophy and techniques in diagnosing and treating various medical problems.

Medical Aspects of Human Engineering

See Prev Med 845—Consideration of interfaces between medicine, physiology, psychology, and engineering in the design of complex systems operated by man; organization and administration of human factors groups.

Biological System Modeling I

See Elec Eng 870—Consideration of current literature in the area of biological system modeling; cardio-vascular, water regulation, and visual tracking and light control; laboratory implementation of models.

Biological System Modeling II

See Elec Eng 871—Modeling of such biological systems as thermoregulatory, respiratory, skeletal-muscle, and neurological; digital and analog computer laboratory implementation.

Bio-Medical Systems Modeling in Health Care

See Elec Eng 872—Systems theory applied to the engineering life-sciences interfaced in emergency and clinical care and to living control systems by applying hybrid computer simulation.

Clinical Instrumentation and Signal Processing

See Elec Eng 873—Basic principles of information transfer and signal processing as applied to clinical health care delivery, such as remote diagnosis, ECG analysis, and telemetry.

881 Seminar in Bio-Medical Engineering G 1-12

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

999 Research in Bio-Medical Engineering G Arr

Research for thesis or dissertation purposes only. Su, Au, Wi, Sp Qtrs.

Biophysics

Office: 980 Biological Sciences Building, 484 West 12th Avenue, 422-2733

294 Group Studies U 3-5

Topics in biophysics for non-majors.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs with permission of instructor.

500 Introduction to Biophysics U 5

An introduction to the attitudes and principles which characterize the physico-chemical understanding of biological systems; examples of current biophysical research. Lipetz, Cassim, and Kornacker.

Sp Qtr. 5 cl. Prereq: Physics 112, Chem 122, Biology 100 or Botany 110 or Zoology 110, and Math 122; or equiv.

505 Survey of Neuroscience U G 5

A presentation of the many approaches to neuroscience, with examples from the works of the University faculty. Lipetz.

Wi Qtr. 5 cl. Prereq: Chem 123, Physics 112 and Zoology 201; or equivs with written permission of instructor.

604 Problems of Scientific Methodology in Sensory Biophysics U G 2

Logic and intuition in science; languages and models used in science—their use, construction, and neural basis. Lipetz, Kornacker and Smith.

Wi Qtr. 12-hr cl. Prereq: A beginning course in biology or zoology; Physics 112; Math 150; a 500 or higher level course in either a physical, biological, or behavioral science.

605†* Psychophysical Measurement U G 5

Analysis and evaluation of theories and methods of psychophysical measurement; general measurement theory; signal detection theory; scaling procedures. Smith.

Au Qtr. 4 cl, 1 2-hr lab. Prereq: Psych 100 or permission of instructor.

607†* Sensory Psychophysics U G 5

Survey of psychophysical studies of sensory systems; variations in input energy and relationships between input and output under different operating conditions. Smith.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: 605 or permission of instructor.

614†* Biophysics of Cell Membranes U G 5

Critical discussion of modern experimental and theoretical methods for studying active transport and electrical excitability. Kornacker.

Wi Qtr. 2 2-hr cl. Prereq: 500 or Zoology 432 or Elec Eng 500; or equiv; or permission of instructor.

615†* Sensory Neurophysiology U G 5

Introduction to the biophysical analysis of sensory transducers and pattern-recognizing neural networks. Kornacker.

Sp Qtr. 2 2-hr cl. Prereq: 614 or permission of instructor.

618†* Information Processing in Sensory Systems U G 5

Electrical measurements of the activities of sensory systems, particularly visual, as related to the pattern-sensing and information-processing performed by those systems. Lipetz.

Sp Qtr. 22-hr cl. Prereq: Zoology 432 or Physiol 600 or Psych 502 or 603; or equiv.

641* Introduction to Molecular Biophysics U G 5

An introduction to applications of modern physics to problems in molecular biology; conceptual rather than mathematical aspects are stressed. Cassim.

Au Qtr. 5 cl. Prereq: Math 152, Chem 123, Physics 113, Biochem 511 or Chem 221, or Microbiol 640 or Physics 251, or equiv or permission of instructor.

642†* Bioenergetics U G 5

Elementary thermodynamics and its application to molecular processes in biology; ATP-ADP system, electron transport, photosynthesis, active transport, membrane potentials, muscle contraction.

Au Qtr. 5 cl. Prereq: Biology 100 or Botany 110 or Zoology 110, Chem 123, Math 122, Physics 112; or equivs with written permission of instructor.

650* Principles and Techniques of Molecular Biophysics: Applications to Contractility U G 5

Molecular basis of contractility is used to demonstrate principles and analytic methodology of molecular biophysics and the use of strong inference in modeling.

Wi Qtr. 5 cl. Prereq: Chem 123 or equiv, Physics 112 or equiv, Math 151 or equiv; and one course in biological sciences; or permission of instructor.

671†* Physical Analysis of Organized Systems in Biology U G 3

A unified approach to the analysis of structure-function relations in enzymes, membranes, and neural nets based on an extension of statistical thermodynamics. Kornacker.

Sp Qtr. 3 cl. Prereq: 500 or Math 123 or Physics 241, or permission of instructor.

694 Group Studies U 2-5 G 2-10

Group study of special topics in biophysics.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs for undergraduates and 35 cr hrs for graduates.

695†* Seminar in Biophysics Research U G 2

Survey of the areas of specialization and approaches to research in biophysics.

Au, Wi Qtrs. 2 cl. Prereq: Permission of chairman. Repeatable to a maximum of 6 cr hrs.

700 Seminar in Biophysics U G 1

Au, Wi, Sp Qtrs. 1 cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

702 Advanced Experimental Methods in Biophysics U G 1-3

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

711* Neural Integration of Multiple Sensory Inputs U G 3

Differential coding, gating, selective habituation and dishabituation by integrative centers of the nervous system which modulate auditory, tactile, visual, and kinesthetic stimuli. Hill.

Sp Qtr. 1 2½-hr cl. Prereq: Zoology 432 or Physiol 600 or 601 or equiv; and permission of instructor.

741* Molecular Biophysics I U G 5

The chemical physics approach to the study of macromolecules as applied to important biological problems for students in all biological disciplines. Cassim.

Au Qtr. 4 cl. Prereq: Chem 532 or equiv.

742* Molecular Biophysics II U G 5

Continuation of 741. Cassim.

Wi Qtr. 4 cl. Prereq: 741.

743†* Statistical Thermodynamics in Biology U G 5

Fundamentals of statistical mechanics with applications to the thermodynamics and kinetics of biological processes.

Wi Qtr. 5 cl. Prereq: 642 or Chem 521 or 532; Math 254.

Radiation Biophysics

See Physiol 746.

Physical Instrumentation for Biologists

See Physiol 748.

760 Mechanisms of Psychobiological Integration U G 5

Survey of how psychologic factors modulate physiologic and behavioral parameters, and lead to adaptive and maladaptive responses to specific sensory stimuli and to the total environment. Corson.

Wi Qtr. 1 2-hr cl, 6 lab hrs. Prereq: Permission of instructor and 1 course in advanced vertebrate or mammalian physiology or physiological psychology; Pharmacol 822, Physiol 601-602 or 835-836 are recommended.

H783 Honors Course U 3-5

A program of study arranged for each student, with individual conferences, reports and honors thesis.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing with a grade of A in at least half of the courses taken in the student's major program, with an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Repeatable to a maximum of 15 cr hrs. At least 8 cr hrs are required of candidates for the degree BA or BS with distinction in biophys. Failure to receive a mark of S in this course is a disqualification for special honors.

793 Individual Studies U G 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

797 Interdepartmental Seminars U P G 1-5

See Interdepartmental Seminars.

805 Sensory Biophysics I G 5

Integration of psychophysical, electrophysical, and anatomical data in the study of sensory systems; the visual system is used as an example. Ingling.

Au Qtr. 4 cl, 1 2-hr lab. Prereq: 605 and Phys Opt 820, or permission of instructor.

806 Sensory Biophysics II G 5

Continuation of 805. Ingling.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: 805.

810†* Principles of Nervous System Integration G 5

The principles of organization of neurons into networks supplying the information handling and control functions needed for the integration and survival of the animal. Lipetz.

Au Qtr. 5 cl. Prereq: 615 and Math 152.

818 Functional Study of Sensory Abnormality G 5

Study of sensory abnormalities by electrophysiological and psychophysical methods to reveal anatomical and neural correlates of sensory function; examples drawn from the visual system. Biersdorf.

Au Qtr. 4 cl, 1 2-hr lab. Prereq: 805 or permission of instructor.

841* Quantum Biology G 5

Quantum mechanics of excited states of conjugated systems of polypeptides and polynucleotides; dynamics of molecular processes involving energy and momentum storage and transfer. Cassim.

Sp Qtr. 4 cl. Prereq: 742, or Chem 943 or 973, or permission of instructor.

Bioelectric Potentials

See Pharmacol 845.

**890 Interdepartmental Seminar
in Developmental Biology G 2**

Students will present oral reports and lead discussion on research progress in specific areas of developmental biology.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs. Given cooperatively by Botany, Genetics, Microbiology, and Zoology.

894 Group Studies G 1-5

Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

999 Research in Biophysics G Arr

Research for thesis and dissertation purposes only. Su, Au, Wi, Sp Qtrs.

**801 Advanced Topics in
Biostatistics II G 2-5**

Continuation of 800.

Wi Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

**802 Advanced Topics in
Biostatistics III G 2-5**

Continuation of 801.

Sp Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

999 Research in Biostatistics G Arr

Research for dissertation purposes only.

Au, Wi, Sp Qtrs.

Biostatistics

Office: 128 Cockins Hall, 1958 Neil Avenue, 422-2866

**601 Stochastic Processes
in the Biological Sciences U G 3**

Introduction to discrete stochastic processes, random walk, Markov Chains, birth and death processes, epidemic process, processes for competing among species, diffusion processes, and applications.

Wi Qtr. 3 cl. Prereq: Stat 520 and at least 10 cr hrs in biological sciences.

605 Population Dynamics U G 3

Study of birth, death, and growth process, use of rates and ratios, force of mortality, competing risks, and selected epidemiological problems.

Au Qtr. 3 cl. Prereq: Stat 521.

607 Biostatistics Laboratory U G 1-5

Experience in statistical design and analysis of biomedical studies through individual association with active research workers in medicine.

Su, Sp Qtrs. Prereq: Grad standing in stat or biostat, or permission of instructor. Repeatable to a maximum of 10 cr hrs.

610 Statistical Bioassay I U G 3

Direct assays, dose-response relationships, parallel line and slope ratio assay, special statistical designs in assay, Bayesian bioassay; examples.

Sp Qtr. 3 cl. Prereq: Stat 528 or 521, and Pharmacol 600; or permission of instructor.

611† Statistical Bioassay II U G 3

Continuation of 610.

Su Qtr. 3 cl. Prereq: 610.

**616† Computer Applications in the
Biomedical Sciences U G 5**

Introduction to computer programming languages such as Fortran, Algo, Cobol; packaged statistical programs; medical applications of computers; differential diagnosis, radiation treatment dose planning, electrocardiogram analysis.

Su Qtr. Prereq: Permission of instructor.

**800 Advanced Topics in
Biostatistics I G 2-5**

Topics from current research in biostatistics.

Au Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

Black Studies

Office: 486 University Hall, 230 North Oval Mall, 422-3700

101 Introduction to Black Studies U 5

An introduction to the goals, purposes, and basic preparation necessary for other black studies courses.

Su, Au, Wi, Sp Qtrs. 3 cl, 2 1-hr labs.

130 Africa and The World U 5**130.01 African History**

A general introduction to the history of Africa from prehistoric to recent times.

Au Qtr. 5 cl.

154 Introduction to Black Literature U 5

Black literature in Africa, the United States, and the Caribbean.

Su, Au Qtrs. 5 cl.

**161 Black Psychology: New Behavioral
Perspectives U 5**

Introduction to black psychology; emphasis on origins, developments, and applications of the discipline.

Sp Qtr. 2 2-hr cl. Prereq: 101, Psych 100, or permission of instructor.

180 Fundamentals of Black Dance U 5

Fundamentals and techniques of contemporary black dance. McCray.

Au, Wi, Sp Qtrs. 3 2-hr cl. Prereq: Permission of instructor.

201 Elementary Swahili U 5

Pronunciation relationships between vowels and consonants, practice of conversation in relation to names of things, greetings, songs, etc.

Au, Wi, Sp Qtrs. 5 cl.

202 Elementary Swahili U 5

Continuation of 201 with an emphasis on grammar.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 201 or permission of instructor.

Social Problems

See Sociol 202. Offered in cooperation with Black Studies.

203 Intermediate Swahili U 5

Continuation of 202 with emphasis on reading and writing; translation of simple sentences or words from Swahili to English, English to Swahili.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 202 or permission of instructor.

204 Intermediate Swahili U 5

Intermediate grammar, sentence analysis with reference to parts of speech.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 203 or permission of instructor.

218 Black Community Development U 5

Problem solving and field work in the local urban black community.

Au, Wi, Sp Qtrs. 22-hr cl. Repeatable to a maximum of 10 cr hrs.

220† Education and Political Development in Africa U 5

The role and impact of education in the process of political development in selected African countries.

Wi, Sp Qtrs. 5 cl.

222 Economic Problems of Black America U 5

Economic problems of black Americans including economic history, job opportunities, income, consumer purchases, housing, business enterprises. Gouke.

Sp Qtr. 5 cl. Prereq: 5 cr hrs in econ or permission of instructor.

230 The Black Woman: Her Role in the Liberation Struggle U 3

The political role of the black woman in the struggle for black freedom; examination of changing laws and customs affecting the status of black women.

Wi Qtr. 3 cl.

238† Contemporary Afro-American History U 5

Sp Qtr. 5 cl.

244 Survey of African and African-Derived Music in the Western World U 3

An introduction to traditional African music and its role in the history and development of Afro-American music with its concomitant socio-political milieu.

Au, Wi Qtrs. 3 cl. Not open to students with credit for Music 244. Cross-listed in Music.

247† Africa in the 19th Century U 5

Emphasis on African societies during the century of the European scramble for colonies.

Wi Qtr. 5 cl.

248 Leadership and Mass Movements in Contemporary Africa U 5

A survey of modern African leaders, their philosophies and methods, and a study of the historical, geographical, economical, and political factors that gave rise to the drive for national independence after 1945.

Sp Qtr. 5 cl.

251 Introduction to African Literature U 5

An assessment of the oral prose tradition and written prose of African literature; specific emphasis placed on student reading from primary sources.

Su, Au Qtrs. 5 cl.

254 Themes in Afro-American Literature U 5

A thematic study of selected topics in Afro-American and related literature.

Sp Qtr. 5 cl.

261 Black-White Behavior U 5

A survey of the social significance of important behavioral elements affecting black-white relations. James.

Au Qtr. 5 cl.

270† Basic Musicianship through Black Music U 3

Designed to prepare students with elementary musical knowledge and skills essential for musical literacy with special emphasis on the musical literature of black people.

Au, Wi Qtrs. 3 cl.

271 Contemporary Black Drama U 5

A literary analysis and discussion of plays by black playwrights in recent times.

Wi Qtr. 2 2-hr cl. Prereq: Permission of instructor.

272 Theatre Practice in Black Drama U 5

Local performance of selected black drama.

Sp Qtr. 2 2-hr cl. Prereq: Permission of instructor.

278 Contemporary Black Art U 5

Contemporary black artists and the interrelationship between the social-political and economic environments in which they work.

Wi Qtr. 2 2-hr cl.

American Minority Relations

See Sociol 280. Offered in cooperation with Black Studies.

Introduction to Afro-American Literature

See English 281. Offered in cooperation with Black Studies.

281 Black Leaders in Search of an Ideology U 5

A survey of 19th and 20th century black leaders in Africa, America, and the Caribbean and their search for a useful ideological perspective.

Sp Qtr. 5 cl.

284 Introduction to African and Afro-American Political Thought U 5

Political ideas of Africans and Afro-Americans from the 18th century to the present.

Sp Qtr. 5 cl.

290 Workshop in Visual Communication U 5

The study, analysis, and evaluation of the visual environment of the black community. Stull.

Su, Au, Sp Qtrs. 22-hr cl. Repeatable to a maximum of 15 cr hrs.

294 Group Studies U 1-5

Groups of students are given an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

322 Black Consumer Economics U 5

Economic problems faced by black Americans in their purchases of goods and services. Gouke.

Sp Qtr. 5 cl. Prereq: 222 or permission of instructor.

**325† Freedom Versus Equality:
Blacks and the Political Order U 5**

A systematic analysis of the impact of the simultaneous quest for equality and freedom by blacks and other minorities upon the social and political order.

Wi Qtr. 5 cl.

**326 Black Americans
and the Legal System U 5**

An examination of the role of the legal system in the social and political dynamics of blacks in American society.

Sp Qtr. 5 cl.

327 Introduction to African Politics U 5

Examination of dynamics of nation-building in African countries in transition from colonial dependencies to modern nation-states.

Au Qtr. 5 cl.

**338 African Territories as Nation-States:
Selected Case Studies U 5**

Case studies of selected African territories gaining independence in the aftermath of the Second World War.

Wi Qtr. 5 cl.

**345 Afro-American History to the
Civil War U 5**

Afro-Americans as a people, a culture, and an ethnic group to 1860.

Au Qtr. 5 cl.

**346† Afro-American History:
The Civil War to 1914 U 5**

The culture and history of blacks in the United States from the Civil War until 1914.

Wi Qtr. 5 cl.

351† Caribbean Literature in English U 5

A consideration of prose, poetry, and drama written by Caribbean authors focusing on Caribbean literature in English within the framework of black literature.

Sp Qtr. 5 cl.

**352† Afro-American Cultural
and Intellectual Tradition U 5**

Salient themes in the experience of the black man in America including slavery and bondage, emancipation, integration, and revolt.

Sp Qtr. 5 cl.

**361 Psychology of the Black
Experience U 5**

An analysis of personality theories commonly applied to black Americans and the black experience. James.

Wi Qtr. 5 cl.

375† Early Black Artists U 5

The work of black artists prior to 1920. Hoard.

Wi Qtr. 2 2-hr cl.

376 Foundations of Black Art U 5

The work of black American artists and art movements 1920 thru 1955.

Au Qtr. 2 2-hr cl.

378 History of Jazz I U 5

An in-depth study of the periods, trends, major performer/composers, styles and influences of jazz from its beginnings through the Swing era.

Au Qtr. 5 cl. Prereq: Music background recommended.

379 History of Jazz II U 5

Continuation of 378 from Bop through current styles.

Wi Qtr. 5 cl. Prereq: Music background recommended.

**391 Historical Geography
of Black America U 5**

A study of the spatial effects of migration, segregation, and regionalization in America.

Au Qtr. 5 cl.

401† Advanced Swahili Grammar U 5

Review of fundamental principles of grammar and syntax; exercises in Swahili.

Sp Qtr. 5 cl. Prereq: 204 or permission of instructor.

**402† Advanced Swahili, Grammar
and Composition U 3**

Introduction to advanced Swahili composition and grammar.

Wi Qtr. 5 cl. Prereq: 401 or permission of instructor.

**451 Black Experience in Caribbean,
African, and Afro-American
Literatures U 5**

Exploration of themes, attitudes, and parallels in black literatures of Africa, the United States, and the Caribbean; particularly stressed will be negritude and Pan-Africanism.

Sp Qtr. 5 cl. Prereq: Jr or sr standing.

Comparative Race Relations

See Sociol 480. Offered in cooperation with Black Studies.

Economics of the Ghetto

See Econ 206.02. Offered in cooperation with Black Studies.

500 Contemporary African Thinkers U 5

A study of the writings and achievements of contemporary African thinkers.

Wi Qtr. 5 cl. Prereq: 101 or permission of instructor.

504 Black Politics U 5

Economic, political, and social constraints on the development of black political power; the efforts made by black people in recent times to organize for effective political action.

Au Qtr. 5 cl. Not open to students with credit for Polit Sc 208 or 504. Cross-listed in Polit Sc.

Social Relations in Folk Societies

See Anthrop 505. Offered in cooperation with Black Studies.

**520† European Influences and African
Educational Systems U G 5**

A comparison of educational policies in three East African nations before and after independence.

Au, Sp Qtrs. 5 cl.

**525† European Colonial Politics
in Africa U G 5**

An examination of the social, economic, and political impact of policies pursued by major European colonial powers toward Africa and African people.

Wi Qtr. 5 cl.

**527 Pan-Africanism
and Nationalism U G 5**

Pan-Africanism and nationalism in the development of Africa.

Au Qtr. 5 cl.

**530 African Political Systems:
A Comparative Analysis U G 5**

A comparative examination of problems of nation-building and national integration faced by selected African nations in the postcolonial period.
Sp Qtr. 5 cl.

**533† Order and Disorder: Blacks in Quest
of Social Justice U G 5**

Comparison of significant black and white thinkers on the concept of order in social and political life.
Wi Qtr. 5 cl.

537† History of Southern Africa U G 5

A study of the processes and patterns of social change from early times to the present.
Sp Qtr. 5 cl.

538 West African History U G 5

An examination of the processes of state formation, trade, and civilization in Africa's Sudanese and Guinean regions.
Sp Qtr. 5 cl.

545† Early Afro-American Thinkers U 5

A study of the writings and achievements of early Afro-American thinkers.
Su, Wi Qtrs. 5 cl. Prereq: 101 or permission of instructor.

**549 Historical Evolution of the
Black Community U G 5**

The political, social, and economic background of the contemporary American black community.
Wi Qtr. 5 cl.

**551 Selected Topics in Afro-American
and Related Literature U G 5**

Topics selected will relate to specific interests of enrolled students, who will develop an intensive analysis of the topic of their choice.
Au, Wi Qtrs. 5 cl. Prereq: 251 or 351.

**552† Contemporary Afro-American
Culture U G 5**

Afro-American culture in 20th century America.
Wi Qtr. 5 cl.

**580† Contemporary Afro-American
Leaders U 5**

The evolution of black leadership after World War II, from non-violence to black nationalism.
Su, Au, Qtrs. 5 cl.

**581 Philosophy in Contemporary
African Literature U 5**

Discussion of African social and political thought as presented by selected African novelists.
Su, Sp Qtrs. 5 cl.

591† Workshop in Creative Writing U G 5

Literary productions by students on themes related to the black experience. Moreland.
Su, Au Qtrs. 2 2-hr cl. Repeatable to a maximum of 10 cr hrs.

**630† Black Political Movements
and Organizations U G 5**

Analysis of black political movements and organizations from slavery to contemporary times.
Sp Qtr.

**633 Black Community Politics:
Welfare and Poverty U G 5**

Welfare and poverty as social, economic and political problems of the black community.
Sp Qtr.

**636 Seminar on Central African
History U G 5**

Specific themes in central African history.
Sp Qtr. 5 cl. Prereq: Permission of instructor.

693 Individual studies U G 1-5

Individual reading or research projects by special agreement between instructor and student.
Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

694 Group Studies U G 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**712 Development of the Black
Community U G 5**

Rural and urban development and their effects on black people in America.
Sp Qtr.

718 Citizen Participation U G 5

To assess and apply techniques of organization and action in the black community.
Au, Qtr. Repeatable to a maximum of 15 cr hrs.

721 Economics of Discrimination U G 5

The economics of racial discrimination with emphasis on black Americans. Gouke.
Au Qtr. Prereq: Grad standing or written permission of instructor.

**725 Political Development
of Sub-Saharan Africa U G 5**

The process and problems of political change in Sub-Saharan Africa.
Wi Qtr.

**732† Tradition in Black Political
Thought U G 5**

The concept of tradition in political thought and the significance of various traditions in the development of black political thought.
Wi Qtr. Prereq: Grad standing or written permission of instructor.

**733† Explanation and Justification
in Black/White Political
Philosophy U G 5**

An analysis of the theories of explanation and justification, with emphasis on their application by black and white political philosophers. Van Horne.
Sp Qtr. Prereq: Grad standing or written permission of instructor.

**735 Methods and Materials of Research
in Black History U G 5**

Davis.
Au Qtr. Prereq: Written permission of instructor.

**736† Eastern Africa in the 19th
Century U G 5**

Migration, trade, and state formation in eastern Africa.
Au Qtr.

738 African Protest Movements U G 5

A socio-historical examination of African armed revolts.

Sp Qtr.

740 Comparative History of Africa and Black America U G 5

A study in Afro-American history involving beginnings in Africa and the cultural and historical experience of blacks in America.

Sp Qtr.

751† Studies in the African Novel U G 5

Dathorne.

Wi Qtr.

Racial and Ethnic Differentiation

See Sociol 780. Offered in cooperation with the Dept of Black Studies.

762 Mental Health and the Black Community U G 5

Theoretical and practical approaches to the problems of mental health in the black community.

Sp Qtr. Prereq: 15 cr hrs in social/behavioral sciences or permission of instructor.

781† Topics in African Political Philosophy U G 5

Post-colonial African conceptions of power, freedom, alienation and cultural identity. Moreland.

Au Qtr. Prereq: Grad standing or written permission of the instructor. Repeatable to a maximum of 10 cr hrs.

782† Modern Black Political Thought U G 5

The historical development of black political thought from the 19th century to the present.

Su Qtr. 5 cl.

789† Studies in Traditional African Political Thought U G 5

A critical analysis and evaluation of the conceptual foundation of pre-colonial African political thought.

Wi Qtr.

833 Seminar in U.S./African Relations G 5

A critical analysis of selected theories of American foreign policy, with special emphasis on Africa. Nelson.

Sp Qtr. Repeatable to a maximum of 10 cr hrs.

851 Afro-American Literary Movements: Black Revolutionary Aesthetic G 5

A critical evaluation of black literature since 1960 in relation to the evolution of a black revolutionary aesthetic. Meacham.

Au, Wi Qtrs.

853† Afro-American Literary Movements: The Harlem Renaissance G 5

Dathorne.

Su Qtr.

854† Seminar in Major Black Authors G 5

Dathorne.

Wi Qtr. Prereq: Permission of instructor.

860 Seminar in Black Literature G 5

Topics in African, Afro-American and Caribbean literature. Madubuike.

Wi Qtr. Repeatable to a maximum of 10 cr hrs.

865 Black Role Models: Racism and Sexism G 5

Effects of racism and sexism on the various role models that are prevalent in the black community emphasizing consequences and alternatives. James.

Sp Qtr. Prereq: 15 cr hrs in social/behavioral sciences or permission of instructor.

998 Research in Black Studies: Thesis G Arr

Preparation for the master's comprehensive examination, and research for the thesis.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

Botany

Office: 108 Botany and Zoology Building, 1735 Neil Avenue, 422-8952

106 General Biology U 5

Basic concepts and methodologies as they relate to the interactions of biological systems in a contemporary world.

Su, Au, Wi, Sp Qtrs. 2 cl, 3 biolearning center hrs. Not open to students with credit for 111 or Biology 101, Zoology 106 or 111. Not intended for students planning to major in the biological sciences. Cross-listed in Zoology.

110 General Biology U 5

An introduction to the biological sciences, emphasizing the important concepts and principles which tend to unify the study of life at various levels of organization.

Su, Au, Wi, Sp Qtrs. 2 cl, 3 biolearning center hrs. H110 (honors) may be available to students enrolled in an honors program or by permission of dept. Not open to students with credit for Biology 100 or 102, or Zoology 110. Cross-listed in Zoology.

112 General Botany U 5

A survey of the major groups of plants with emphasis on diversity, modes of reproduction, ecology and economic importance.

Su, Au, Wi, Sp Qtrs. 3 cl, 1 2-hr lab. Not open to students with credit for 100, 102, or 500.

201 Topics in Plant Evolution and Phylogeny U 4

Major events in the evolution of plants and selected aspects of current problems in plant phylogeny. Taylor.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 112 or equiv with written permission of instructor.

202 Plant Development U 5

An introductory course in plant development at the organismic level, emphasizing physiology, morphology, and anatomy. Raghavan.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 102 or 112 or 500.

210 Local Flora U 5

A lecture, laboratory, and field course in identifying common Ohio plants; emphasis on taxonomic principles, use of keys and manuals, and field recognition of plants. Stuckey and Brunken.

Su, Sp Qtrs. 3 cl, 2 2-hr labs, several field trips. Prereq: 101 or 102 or 112 or 500 or equiv with written permission of instructor. Not open to students with credit for 410.

260 Fungi and Man U 5

The interrelationships of fungi and man, as exemplified by those activities beneficial or detrimental to mankind. Schmitt.

Su, Au Qtrs. 3 1½-hr cl. Prereq: 102 or 112 or 500 or equiv with written permission of instructor.

293 Individual Studies U 1-5

Individual work in the field of the chosen problem.

Su, Au, Wi, Sp Qtrs. Prereq: 112 and written permission of instructor. Only 5 cr hrs may count towards a botany major. Repeatable to a maximum of 10 cr hrs.

294 Group Studies U 1-5

Group study of topics in botany.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs for different topics only.

313 Introduction to Ecology**313.01 Lecture U 3**

A lecture series introducing the study of the distribution and abundance of species, the basic energetics of living systems and evaluation of the ecosystem concept.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 102 or 112 or Zoology 201. Not open to students with credit for Biology 313 or 313.01, or 313.02, or Zoology 313.01. Cross-listed in Zoology.

313.02 Laboratory U 2

A laboratory to acquaint students with elementary sampling procedures and statistics used in ecology field work; course is complimentary to 313.01.

Au, Wi, Sp Qtrs. 2 lab hrs. Prereq or concur: 313.01. Not open to students with credit for Biology 313 or 313.01 or Zoology 313.02. Cross-listed in Zoology.

General Plant Pathology

See Plnt Pth 401.

430 Introductory Plant Physiology U 3

Topics in plant physiology at introductory level; solutions, diffusion, osmosis, transpiration, absorption and translocation of water metabolism, enzymes, respiration, carbohydrate and lipid metabolism.

Su, Au, Sp Qtrs. 3 cl. Prereq: 102 or 112 or 500; 10 cr hrs in chem, or written permission of instructor.

431 Introductory Plant Physiology U 3

Topics in plant physiology at introductory level; pigments, photosynthesis, protein metabolism, absorption and utilization of mineral salts, solute translocation, hormones, plant growth and development.

Wi Qtr. 3 cl. Prereq: 102 or 112 or 500; 10 cr hrs in chem, or written permission of instructor.

433 Introductory Plant Physiology Laboratory U 2

An experimental approach to the topics listed under 430.

Su, Au, Sp Qtrs. 2 2-hr labs. Prereq or concur: 430 or permission of instructor. Not open to students with 5 cr hrs in 430.

434 Introductory Plant Physiology Laboratory U 2

An experimental approach to the topics listed under 431.

Wi Qtr. 2 2-hr labs. Prereq or concur: 431 or permission of instructor. Not open to students with 5 cr hrs in 431.

500 Basic Concepts in Botany U G 5

A study of the basic concepts in botany for advanced students with a fundamental knowledge of chemistry. Popham.

Au, Wi Qtrs. 5 cl. Prereq: 10 cr hrs in chem. Not open to students with credit for 102 or 112.

General Genetics

See Genetics 500.

520 Introduction to Ecological General System Theory U G 5

An introduction to the holistic structure and function of terrestrial and aquatic systems utilizing basic principles, ideas, frameworks, and terminology associated with general system theory. Gilbert.

Wi Qtr. 3 1½-hr cl. Prereq: 10 cr hrs in biological sciences.

601 History of Biology U G 5

Origin and development of important biological approaches, concepts, and theories including those of the contemporary period. Rudolph.

Sp Qtr. 5 cl. Prereq: 15 cr hrs in biological sciences at the 400 level or above, or permission of instructor. Not open to students with credit for Biology 610.

610 Field Botany U G 5

Collection, preservation, field and laboratory identification, and local distribution of plants of the major groups.

Su (1st term) Qtr, given only at Franz Theodore Stone Laboratory. Prereq: 102 or 112 or 500, and 15 additional cr hrs in biological sciences or written permission of instructor.

611 Higher Aquatic Plants U G 5

Aquatic plants, other than the algae of Great Lakes region; field and laboratory work on their identification, and ecological and geographical relations. Stuckey.

Su Qtr, given only at Franz Theodore Stone Laboratory. 3 all-day cl. Au Qtr, given only on Columbus campus. 2 cl, 1 4-hr lab, several Sat field trips. Prereq: 102 or 112 or 500, and 15 additional cr hrs in biological sciences.

612 Taxonomy of Vascular Plants U G 5

A laboratory, field, and discussion course concerning the classification of vascular plants; emphasis on taxonomic principles, systems of classification, family characteristics and relationships. Stuessy.

Sp Qtr. 3 cl, 2 2-hr labs, several Sat field trips. Prereq: 210 or 610, and 10 additional cr hrs in biological sciences or permission of instructor.

613 Evolutionary Processes in Flowering Plants U G 5

Origin of variation in plants with emphasis on evolutionary processes unique to the flowering plants. Brunken.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 201, 210, Genetics 500, or equiv with written permission of instructor.

620 Community Ecology and Ecosystems U G 5

A qualitative and descriptive approach to the establishment, development, succession, and dynamics of plant communities and their interrelations with historic, climatic, soil, and biotic factors.

Au Qtr. 3 cl, 1 4-hr lab, several field trips. Prereq: 102 or 112 or 500, and 15 additional cr hrs in biological sciences.

621 Quantitative Plant Ecology U G 5

Quantitative study of plant population processes, community organization and ecological methods. Schaal.

Su Qtr, given only at Franz Theodore Stone Laboratory. Au Qtr, given only on Columbus campus, 3 cl, 14-hr lab, field trips. Prereq: 313.01 or jr standing with at least 15 cr hrs in biological sciences.

625 Paleobotany U G 5

Structure, phylogeny, and stratigraphic distribution of representative fossil plants. Taylor.

Sp Qtr. 3 3-hr lec/lab; field trips. Prereq: Jr standing with at least 25 cr hrs in biol sciences or sr standing in geol sciences or equiv with written permission of instructor.

630 Plant Physiology U G 3

Advanced study of plant physiology; solutions, diffusion, osmotic quantities, transpiration, absorption and translocation of water, protein metabolism, enzymes, and respiration. Cline, Evans, Fratiannie, and Swanson.

Au, Sp Qtrs. 3 cl. Prereq: 102 or 112 or 500, plus Chem 242 or 252 or Biochem 511; or written permission of instructor.

631 Plant Physiology U G 3

Advanced study of plant physiology; pigments, photosynthesis, carbohydrate and fat metabolism, absorption of mineral salts, translocation of solutes, regulation of plant growth and development. Cline, Evans, Fratiannie, and Swanson.

Su, Wi Qtrs. 3 cl. Prereq: 102 or 112 or 500, plus Chem 242 or 252 or Biochem 511; or written permission of instructor.

Cytological Basis of Genetics

See Genetics 631.

632 Physiological Ecology of Plants U G 5

Physiological factors fundamental to ecological relationships, with emphasis on aquatic communities when appropriate. Platt.

Su Qtr, given only at Franz Theodore Stone Laboratory. Wi Qtr, given only on Columbus Campus, 3 cl, 2 2-hr labs, several Sat field trips. Prereq: 102 or 112 or 500 or equiv with written permission of instructor, introductory plant physiology and introductory ecology, and 20 cr hrs in chem.

Plant Genetics

See Genetics 632.

633 Plant Physiology Laboratory U G 3

An experimental approach to the topics listed under 630. Cline, Evans, Fratiannie, Platt, and Swanson.

Au, Sp Qtrs. 2 3-hr labs. Prereq or concur: 630 or permission of instructor.

634 Plant Physiology Laboratory U G 3

An experimental approach to the topics listed under 631. Cline, Evans, Fratiannie, Platt, and Swanson.

Su, Wi Qtrs. 2 3-hr labs. Prereq or concur: 631 or permission of instructor.

638 Morphology of Vascular Plants U G 5

Morphology, anatomy and evolution of vascular plants. Taylor.

Au Qtr. 3 cl, 3 2-hr labs. Prereq: 102 or 112 or 500, and 15 additional cr hrs in biological sciences.

640 Morphology, Taxonomy, and Ecology of Bryophytes U G 5

Morphology, taxonomy, ecology, and evolution of the mosses and liverworts. Giesy.

Sp Qtr. 4 2-hr labs, several Sat field trips. Prereq: 210 or 440 or equiv with written permission of instructor.

641 Morphology of Angiosperms U G 5

Reproductive processes and mechanisms in angiosperms with emphasis on floral morphology, embryology and formation of fruits and seeds. Raghavan.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: 102 or 112 or 500, and 15 additional cr hrs in biological sciences.

643 Developmental Plant Anatomy U G 5

An observation-discussion course concerning three-dimensional, chronological, and causal dynamics of origin, differentiation, and development of tissues and organs of vascular plants. Popham.

Wi, Sp Qtrs. 4 2-hr cl. Prereq: 10 cr hrs in biological sciences or permission of instructor.

644 Algae U G 5

A general course covering identification, growth, reproduction, evolution, distribution and economic importance of the algae.

Su, Sp Qtrs. Su qtr given only at Franz Theodore Stone Laboratory. 4 2-hr cl. Prereq: 102 or 112 or 500, and 15 additional cr hrs in biological sciences or written permission of instructor.

645 Experimental Phycology U G 5

Isolation, purification, growth, and identification of algae in culture; experimental methods of studying structure, ecology, physiology, and life histories of selected species. Hostetter.

Au Qtr. 4 2-hr cl. Prereq: Permission of instructor.

646 Diatom Ecology and Systematics U G 5

Ecology and systematics of freshwater diatoms including some special techniques, e.g., critical microscopy, photomicrography, and community analysis are covered; collection is required. Hostetter.

Wi Qtr. 4 2-hr cl. Prereq: Permission of instructor.

647† Plankton U G 5

Identification, quantification, distribution and control of freshwater plankton.

Au Qtr. 4 2-hr cl, several field trips. Prereq: Jr standing with 20 cr hrs in biological sciences. Not open to students with credit for Zoology 647. Cross-listed in Zoology.

648 Plant Cell Ultrastructure U G 3

Plant cell structure, function and development as elucidated by electron microscopy. Floyd.

Wi Qtr. 3 cl. Prereq: Jr standing with at least 20 cr hrs in biological sciences; a course in plant physiology or equiv recommended.

660 Mycology U G 5

A study of structures, life histories, and classification of the fungi. Rudolph, Schmitt, and Seymour.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: 102 or 112 or 500, and 15 additional cr hrs in biological sciences.

662 Medical Mycology

The fungi pathogenic to man, their structure and distribution, and the importance of human mycotic diseases. Schmitt.

662.01 Lecture U G 3

Wi Qtr. 3 cl. Prereq: Micrbiol 509 or 602 or 607 or Med Micr 625, and 10 cr hrs in biological sciences.

662.02 Laboratory U G 2

Wi, Sp Qtrs. 2 2-hr labs. Prereq or concur: 662.01 for 3 cr hrs. Not open to students with credit for 662.01 for 5 cr hrs.

663 Aquatic Mycology U G 5

A lecture, laboratory, and field course designed to acquaint the student with the fungi found in aquatic habitats including soil water. Seymour.

Su Qtr, given only at Franz Theodore Stone Laboratory during odd numbered years. 3 all-day cl. Sp Qtr, given only on Columbus campus during even numbered yrs. 3 cl, 2 2-hr labs. Prereq: 102 or 112 or 500, and 15 additional cr hrs in biological sciences.

Cytologic Preparations in Electron Microscopy

See Microbiol 670.

693 Individual Studies U G 1-5

Problems may be selected in the fields of paleobotany, taxonomy, morphology, anatomy, phycology, physiology, ecology, genetics, cytology, mycology, history, or lichenology.

Su, Au, Wi, Sp Qtrs. Prereq: 102 or 112 or 500, and 15 additional cr hrs in biological sciences. Not more than 5 cr hrs may be counted toward an undergraduate major in botany. Repeatable to a maximum of 15 cr hrs for undergraduates.

694 Group Studies U G 1-5

Group study of special topics in botany.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

740* Plant Morphogenesis U G 5

Factors of growth, organization, and differentiation in plants with emphasis on modern experimental approaches to the understanding of the integrated control of plant growth. Raghavan.

Sp Qtr. 3 cl, 2 2-hr labs. Prereq: 430 and 431, or 630 and 631; 643; or permission of instructor.

760 Lichenology U G 3

The biology of lichens and their symbionts with emphasis on morphology, ecology, physiology, and systematics. Rudolph.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: 430 and 431 or equiv and 644 or 660.

H783 Honors Course U 3-5

Problems may be selected in the fields of paleobotany, taxonomy, morphology, morphogenesis, anatomy, phycology, physiology, ecology, mycology, or lichenology.

Su, Au, Wi, Sp Qtrs. Prereq: 4th year standing, a grade of A in at least half of the botany courses and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Failure to receive a mark of S in this course is a disqualification for graduation *with distinction*. Repeatable to a maximum of 15 cr hrs.

801 Seminar in Systematic and Evolutionary Botany G 2

Discussion of advanced topics in systematic and evolutionary botany. Brunken, Floyd, Giesy, Hostetter, Rudolph, Seymour, Stuessy, Stuckey, and Taylor.

Au, Wi, Sp Qtrs. Arr. Repeatable to a maximum of 8 cr hrs.

802 Seminar in Environmental Botany G 2

Discussion of advanced topics in environmental botany. Gilbert, Hostetter, Platt, Rudolph, Schaal, Schmitt, Stuckey, and Swanson.

Au, Wi, Sp Qtrs. Arr. Repeatable to a maximum of 8 cr hrs.

803 Seminar in Developmental and Regulatory Botany G 2

Discussion of advanced topics in developmental and regulatory botany. Cline, Evans, Fratiannie, Platt, Popham, Raghavan, and Swanson.

Au, Wi, Sp Qtrs. Arr. Repeatable to a maximum of 8 cr hrs.

810 Experimental Taxonomy G 5

Biosystematic categories, population analysis of mass collections, individual variations, hybridization, and introgression are studied in relation to the methods and materials of experimental taxonomic research. Stuessy.

Au Qtr. 3 cl, 2 2-hr labs, several Sat field trips. Prereq: Permission of instructor.

833 Advanced Plant Physiology: Growth G 3

The physiology of growth and reproduction; special attention given to the interrelated effects of internal and external factors on these processes. Cline, Evans, and Fratiannie.

Wi Qtr. 3 cl. Prereq: 630, 631, and 10 additional cr hrs in biological sciences; or permission of instructor.

834 Advanced Plant Physiology: Water and Solute Relations G 3

Osmotic relations, mechanisms of water and solute uptake and transport; salt metabolism, drought and salt tolerance. Swanson.

Sp Qtr. 3 cl. Prereq: 630, 631, and 10 additional cr hrs in biological sciences; or permission of instructor.

860 Advanced Mycology G 3

Advanced detailed study of specific groups of fungi, with emphasis on their morphology, cytology, and genetics. Rudolph, Schmitt, and Seymour.

Sp Qtr. 3 2-hr labs. Prereq: 660.

861 Physiology of Fungi G 5

The physiology of the nutrition, growth, and reproduction of fungi. Garraway.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 630, 631, 660 or written permission of instructor. Not open to students with credit for Plnt Pth 861. Cross-listed in Plnt Pth.

890 Interdepartmental Seminar in Developmental Biology G 2

Students will present oral reports and lead discussion on research progress in specific areas of developmental biology.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs. Given cooperatively by Botany, Genetics, Microbiol, and Zoology.

891 Interdepartmental Seminar in Environmental Biology G 2

Selected topics treating the environmental aspects of organisms, populations, and ecosystems as they may relate to time, space, and human activities.

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs. Given cooperatively by Botany, Entomol, Microbiol, and Zoology.

896 Interdepartmental Seminar in Polar and Alpine Studies G 1-3

See Interdepartmental Seminars.

897 Interdepartmental Seminar in Natural Resources G 1

See Interdepartmental Seminars.

999 Research in Botany G Arr

Research for thesis and dissertation purposes only.
Su, Au, Wi, Sp Qtrs.

Business Administration: Interdisciplinary

Office: 126 Hagerty Hall, 1775 College Road, 422-2715

493 Individual Studies U 1-10

Individual study projects in selected areas in business administration.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

494 Group Studies U 1-10

Group study projects in selected areas in business administration.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

693 Individual Studies U G 1-6

Individual study projects in related areas in business administration.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

694 Group Studies U G 1-6

Group study projects in selected areas in business administration.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

799 Business Policy U G 4

Analysis of major policy decisions in the context of the entire philosophical framework of business; emphasis on consideration of interrelationships of major functions of business. Cullman and staff.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: Approved application for BS in Business Administration.

808 Business Problems and Cases G 1-5

Integrated analysis of selected problems; effects of policy decisions on market position, personnel, production, finances, and the firm's role in society and the economy.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Each subdivision repeatable to a maximum of 15 cr hrs.

808.01 Policy Decisions**808.02 Seminar of Current Problems****808.03 Issues in Business and Society****809 Business Policy G 5**

Examination of fundamental factors in organization and management; analysis of major policy decisions; effects of policy decisions on sales, production, personnel, and finances. Cullman and staff.

Su, Au, Wi, Sp Qtrs. 2-2-hr cl. Prereq: Final qtr of MBA studies or permission of graduate committee.

998 Research in Business Administration: Thesis G Arr

Research for thesis purposes only.
Su, Au, Wi, Sp Qtrs.

999 Research in Business Administration: Dissertation G Arr

Research for dissertation purposes only.
Su, Au, Wi, Sp Qtrs.

Business Administration: Finance

Office: 318 Hagerty Hall, 1775 College Road, 422-5026

220 Personal Finance U 3

Budgeting, credit, borrowing money, bank relationships, savings, insurance, real estate, stocks and bonds, income taxes, social security, annuities, wills, trusts, estates, and taxes.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 2nd yr standing. Not open to students in College of Administrative Science majoring in either acctg or finance.

510 Legal Environment of Business U 4

American legal institutions and sources of law; analysis of basic contractual concepts; and an introduction to government regulation.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 3rd yr standing.

611 Regulatory Environment of the Business Firm U G 3

Analysis of the legal basis of government regulation, and a survey of the principal federal regulatory and antitrust statutes with emphasis on current application.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 3rd yr standing.

612 Legal Aspects of the Distributive Processes U G 4

Problems arising out of the distribution of consumer goods; obligations of sellers, including product liability; analysis of selected pricing, consumer-protection, and commercial paper statutes. Howell and Melia.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 510 or equiv.

613 Legal Environment of Institutional Management U G 3

Examination of business associations, emphasizing the legal aspects of the management process and the societal influence and responsibilities of the corporation. Ray and Blackburn.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 510 or equiv.

620 Business Finance U G 4

Forms of business organization; corporate securities, financing through securities; sources and management of working capital; administration of income; expansion and combination; reorganization, receivership, and dissolution. Blythe, Cole, and staff.

Su, Au, Wi, Sp Qtrs. 2-2-hr cl. H620 (honors) may be available to students enrolled in an honors program or by permission of faculty. Prereq: Econ 400 or 402, or equiv; and Acctg 201, 212, or equiv.

640 Insurance and Risk U G 4

Principles and practices of insurance and risk management, including personal, business, and social viewpoints in regard to insurance for life, health, property, and liability risks. Bickelhaupt and Close.

Su, Au, Wi, Sp Qtrs. 2-2-hr cl. Prereq: Econ 400 or 402, or equiv.

670 Real Estate and Urban Land Economics U G 4

Introduction to investment decision making in land resource utilization; consideration of factors such as real estate markets, public influence, legal principles, financing, and administration. Racster and Brueggeman.

Su, Au, Wi, Sp Qtrs. 2-2-hr cl. Prereq: Econ 400 or 402, or equiv.

720 Corporation Finance U G 3

A critical study of the field of corporation finance from an economic point of view. Mullins, Blythe and staff.

Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: Accting 711 or equiv; and Econ 400 or 402, or equiv. Open only to students preparing for grad work in business.

721 Managerial Finance U G 4

Financial management of business units with emphasis on finance organization structure, collecting and using financial data, judging profitability, liquidity, sources of capital, internal financial operations. Harvey, Mullins, and staff.

Au, Wi, Sp Qtrs. 2-2-hr cl. Prereq: 620 or equiv.

722 Investment Management U G 4

Investment objectives; types of investments and their relative merits; security prices and yields; investment programs; and taxes. Anderson, Buser, and McConnell.

Su, Au, Wi, Sp Qtrs. 2-2-hr cl. Prereq: 620 or equiv.

723 Investment Analysis U G 4

Methods of investment analysis; analysis of investment data; principles and standards for selection of specific investment; portfolio management. Anderson, Buser, and McConnell.

Au, Wi, Sp Qtrs. 2-2-hr cl. Prereq: 722 or equiv.

724 Stock Market U G 4

Practices, procedures, and regulations relating to listing and to buying and selling securities in the organized security markets.

Au Qtr. 2-2-hr cl. Prereq: 620 or equiv.

725 International Finance U G 4

The international financial environment; management of financial risks inherent with international business; problems of implementing corporate finance principles overseas; financial aspects of parent-subsidiary relationships. Ricks.

Wi Qtr. 2-2-hr cl. Prereq: 620 or equiv.

726 Management of Financial Institutions U G 4

Structure, operations, regulations, and economic significance of financial institutions with emphasis on savings, trust, mortgage lending, consumer lending, regulatory, and investment banking institutions. Rapp, Cole, and Blythe.

Au, Wi, Sp Qtrs. 2-2-hr cl. Prereq: 620 and Econ 520 or equiv.

727 Cases in Financial Institutions U G 4

Examination of the objectives, functions, policies, organization, practices, and procedures of financial institutions from the viewpoint of institutional management. Cole, Rapp, and Blythe.

Sp Qtr. 2-2-hr cl. Prereq: 726 or equiv.

728 Quantitative Methods in Managerial Finance U G 4

Application of mathematical and statistical methods in formulating and solving problems of financial management. Chen, McConnell, and Kim.

Au, Sp Qtrs. 2-2-hr cl. Prereq: 721 or equiv.

729 Cases in Managerial Finance U G 4

Analysis of qualitative and quantitative financial factors involved in managerial decisions in actual business cases. Mullins, Blythe, Rapp, Ricks, and Harvey.

Au, Wi, Sp Qtrs. 2-2-hr cl. Prereq: 721 or equiv.

741 Personal Insurance Planning U G 4

Analysis of personal consumer needs for life, health, property, and liability insurance; development of contracts, legal aspects, rates, and the technique of estate programming. Bickelhaupt and Close.

Au, Qtr. 2-2-hr cl. Prereq: 640 or equiv.

743 Insurance Operations and Regulations U G 4

Examination of the major functions of insurers of all types; product development, underwriting, rating, reinsurance, marketing systems, loss payment, financial analysis, management, and regulation. Close and Bickelhaupt.

Wi Qtr. 2-2-hr cl. Prereq: 640 or equiv.

745 Social Insurance U G 4

Study of social insurance systems including Social Security, Unemployment Compensation, Workmen's Compensation, proposed National Health Insurance and their effects on the American economy and society. Bickelhaupt and Close.

Sp Qtr. 2-2-hr cl.

749 Business Risk Management U G 4

Development of insurance and risk management programs for business consumers; risk identification, evaluation and treatment; all lines, including group insurance, business life insurance and pensions. Bickelhaupt and Close.

Sp Qtr. 2-2-hr cl. Prereq: 640 or equiv.

771 Real Estate Investment Analysis U G 4

Intensive coverage of real estate investment analysis with consideration of tax aspects and financing of income properties through case problems and computer application. Brueggeman and Racster.

Wi Qtr. 2-2-hr cl. Prereq: 670 or equiv.

772 Real Estate Finance U G 4

Sources and methods of obtaining funds for real estate investment; financial institutions, legal considerations, the construction industry and cycles, and financing policies, practices and experiences. Brueggeman and Racster.

Au Qtr. 2-2-hr cl. Prereq: 670 or equiv.

773 Real Estate Valuation U G 4

Professional valuation as a guide to business decisions; valuation theory and procedures; factors influencing real estate values, and the selection and analysis of data. Brueggeman and Racster.

Wi Qtr. 2-2-hr cl. Prereq: 670 or equiv.

774 Income Property Valuation U G 4

The value-creating attributes of investment properties are examined. Methodologies of income-property valuation and investment analysis are presented. Brueggeman and Racster.

Sp Qtr. 2-2-hr cl. Prereq: 670 or equiv.

775 Real Estate Law U G 4

Legal aspects of real estate transactions and documents (deeds, mortgages, and leases) and selected elements of the law of real estate brokerage. Gibson and Ray.

Wi, Sp Qtrs. 2-2-hr cl. Prereq: 510 or equiv, or permission of instructor.

810 Government Regulation and Business Decisions G 3

Analysis of methods utilized by government to regulate business and maintain competition, emphasizing the impact of administrative and judicial interpretation upon managerial decisions. Howell and Gibson.

Wi Qtr. 2 1½-hr cl. Prereq: 510 or equiv.

811 Legal Environment of the Business Firm G 3

Systems view of interaction of business firm and the legal structure; regulation of form and functional processes; integration of legal advice into the management process. Gibson.

Au Qtr. 2 1½-hr cl.

820 Advanced Finance G 3

A critical study of internal financial management of business enterprises, based primarily on comprehensive cases analyses. Blythe, Mullins, Harvey, and staff.

Su, Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: 720, Accting 711 or permission of instructor.

821 Seminar in Corporate Financial Analysis G 3

Critical study of the growing number of analytical techniques and research findings that lie between present practices and the frontiers of financial research. Chen and Kim.

Au, Wi Qtrs. 2 1½-hr cl. Prereq: 820 or permission of instructor.

822 Security Market G 3

A critical study of the markets for listed and unlisted securities and the factors influencing security prices. Anderson and Buser.

Su, Wi Qtrs. 2 1½-hr cl. Prereq: Permission of instructor.

823 Quantitative Methods in Investment Management G 3

Recent developments in quantitative methods applied to investment analysis and portfolio management including the Markowitz portfolio model, random walk hypothesis, utility in risk analysis and valuation models. Anderson, Buser and Harvey.

Au, Sp Qtrs. 2 1½-hr cl. Prereq: 722 or 822, and Bus-Mgt 801.02, or equiv or permission of instructor.

826 Seminar in Financial Institutions G 3

Review, analysis, and evaluation of pertinent literature and research findings related to financial institutions. Blythe, Cole, and Rapp.

Sp Qtr. 2 1½-hr cl. Prereq: 726 and 820, or permission of instructor.

840 Seminar in Life and Health Insurance G 3

Critical consideration of current topics of significance in the field of life and health insurance through class discussions and individual research reports. Bickelhaupt and Close.

Au Qtr. 1 2-hr cl. Prereq: Permission of instructor.

841 Seminar in Property and Liability Insurance G 3

Investigation through class discussion and reports of the current literature of significant topics in property and liability insurance. Bickelhaupt and Close.

Wi Qtr. 1 2-hr cl. Prereq: Permission of instructor.

843 Risk Analysis and Administration G 3

A comprehensive view of general nonspeculative risk problems as well as specific problems in the students' areas of concentration with emphasis on insurance as a tool. Bickelhaupt and Close.

Sp Qtr. 2 1½-hr cl. Prereq: Permission of instructor.

845 Problems and Issues in Social Insurance G 3

Examination of problems and developing trends in social insurance, emphasizing interactions between social insurance, private insurance, and public welfare. Bickelhaupt and Close.

Au Qtr. 1 2-hr cl. Prereq: 640 or 745 or permission of instructor.

870 Seminar in Real Estate G 3

Issues and problems in the economics and administration of real estate resources critically examined through an intensive investigation of the literature. Brueggeman and Racster.

Wi Qtr. 1 3-hr cl. Prereq: 670 plus one of the following: 771, 772, 773, or equiv.

871 Urban Environment G 3

Urban problems and the businessman's role in solving them through study of the history of urbanization, functions of urban areas, and community involvement by private and public agencies. Hunker and Racster.

Su Qtr. 1 3-hr cl. Prereq: Permission of instructor.

872 Real Estate Financing and Development G 3

Cases and readings in real estate development and financing, including real estate investment trusts, syndications, corporations and joint ventures. Brueggeman and Racster.

Sp Qtr. 1 3-hr cl. Prereq: 670 or 873 or permission of instructor.

873 Urban Real Estate Analysis G 3

The process of analysis and the tools employed in making decisions about the planning, financing, marketing, rehabilitation, and production of real estate resources. Brueggeman and Racster.

Au Qtr. 1 3-hr cl. Prereq: Permission of instructor.

920 Seminar in Finance G 3

Modern portfolio theory and its empirical and institutional applications; mean-variance and state-preference models of individual and market equilibrium; one-period and multiperiod allocation problems. Chen, Kane and Kim.

Au, Wi, Sp Qtrs. 1 3-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 hrs.

925 Seminar in International Business G 3

A critical study of current research methodologies and findings in the field; emphasis on the various subsets varies from year to year. Ricks and Bartels.

Au Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

929 Industrial Consolidations and Mergers G 3

Historical and analytical study of industrial consolidation and mergers.

Su Qtr. 1 2-hr cl. Prereq: 620 or equiv.

Business Administration: Management Science

Office: 414 Hagerty Hall, 1775 College Road, 422-5028

391 Decision Sciences: Operations Research Techniques U 4

Examines the use of operations research techniques in managerial decision making processes; constrained linear optimization, non-linear optimization, network analysis, queuing theory, simulation.

Su, Au, Wi, Sp Qtrs. 3 1¼-hr cl. Prereq: Cptr/Inf 211, Stat 123 or 133 or equiv.

491 Decision Sciences: Statistical Techniques U 5

Examines the use of statistical techniques in managerial decision making processes; sampling and estimation, hypothesis testing, chi-square tests, simple and multiple regression, time series analysis.

Su, Au, Wi, Sp Qtrs. 32-hr cl. Prereq: Cptr/Inf 211, Stat 123 or 133 or equiv.

500 Introduction to Administrative Problems U 3

Introduction to basic concepts in administration, emphasizing application of theories of interpersonal relations and formal organization to management of individual and organizational efficiency and effectiveness.

Su, Au, Wi, Sp Qtrs. 3 cl. Not open to students in ADM.

601 Business Statistics U G 2-5

Price and production indexes; analysis of time series; linear correlation applied to economic and business problems.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: Econ 442 or Soc Work 380 or equiv.

630 Introduction to Production and Operations Management U G 4

Topics and problems in managing and controlling systems including demand-capacity relationships, product factors, physical factors, process factors, and system maintenance.

Su, Au, Wi, Sp Qtrs. 4 cl. H630 (honors) may be available to students enrolled in an honors program or by permission of faculty. Prereq: 490 or 491 or equiv.

660 Introduction to Manpower and Industrial Relations U G 4

Principles and practices of recruiting, selecting, developing, collective bargaining, compensating, and utilizing effective manpower resources.

Su, Au, Wi, Sp Qtrs. 4 cl. H660 (honors) may be available to students enrolled in an honors program or by permission of faculty. Prereq: Econ 400 or 402, or equiv. Not open to students with credit for LHR 660. Cross listed in Labor and Human Resources.

691 Decision Science: Managerial Applications U 3

Building and using mathematical models for planning and control of administrative processes. Integrates quantitative tools from 391 and 491 with functional business areas.

Su, Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: 391, 491, 630, Bus-Fin 620, Bus-Mktg 650, or equiv.

700 Management Processes: Planning and Controlling U G 5

Business goals and policies; phases of decision making; analysis of alternatives; establishing, evaluating, and controlling plans of action. Berry.

Su, Au, Wi, Sp Qtrs. 22-hr cl. Prereq: 490, 630, Bus-Fin 620, Bus-Mktg 650 or equiv.

701 Introduction to Organizational Behavior U G 5

Introduction to individual and group behavior in organizations; procedures for supporting and strengthening emergent behavior; examination of organizational interaction with environments.

Su, Au, Wi, Sp Qtrs. 3 1-hr cl, 1 1½-hr cl.

703 Organization Development and Climate U G 3

Examination of organization climate as a variable; methods of measurement, and managerial approaches to altering it.

Wi Qtr. 3 cl. Prereq: 700 and 701.

708 Introduction to Administrative Behavior U G 3

Introduction to behavioral concepts of concern to management. Berkes and Mohrman.

Su, Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: Permission of instructor. Open only to students preparing for grad work.

730 Fundamentals of Production and Operations Management U G 3

Topics and problems in managing the production and operational systems in various types of organizations; consideration of managerial and economic implications.

Au, Sp Qtrs. 2 1½-hr cl. Open only to students preparing for grad work in business.

731 Production and Operations Management I U G 4

Analysis of capacity related problems, including forecasting, capital investments, product selection and design, maintenance, plant location, materials handling, and facilities design.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 700 or permission of instructor.

732 Productions and Operations Management II U G 4

Analysis of operating and control problems, including aggregate planning, scheduling, inventory control, quality assurance, work measurement, and cost analysis.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 731 or permission of instructor.

734 Analysis and Design of Operating Systems U G 4

Analysis and design of modern operations, including model building and computer simulation. Vitt and Goodman.

Wi Qtr. 4 cl. Prereq: A course in computer programming or permission of instructor.

739 Problems in Production and Operations Management U G 4

Case study approach to problem-solving and decision-making for production and operations management.

Au, Sp Qtrs. 2 3-hr cl. Prereq: 731, 732, or permission of instructor.

**761 Industrial Relations
Administration U G 4**

Examination of the process of accommodation and rule-making among management, employees, and government relative to their respective goals and strategies, and pertinent legislation and environmental constraints. Miljus and Yaney.

Au, Wi Qtrs. 2 1½-hr cl. Prereq: 660 or 701, or permission of instructor. Not open to students with credit for LHR 761. Cross-listed in Labor and Human Resources.

762 Compensation Administration U G 4

Managerial aspects of motivation and compensation principles and practices for administrative, operative, research, and professional employees in private and public organizations. Beneki.

Wi, Sp Qtrs. 2 1½-hr cl. Prereq: 660 or 701, or LHR 660, or permission of instructor. Not open to students with credit for LHR 762. Cross-listed in Labor and Human Resources.

**769 Problems in Manpower
and Industrial Relations U G 4**

Problems and case histories are utilized to develop proficiency in applying principles and developing decision-making powers in regard to manpower and human relations areas.

Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 761, 762, or permission of instructor. Not open to students with credit for LHR 769. Cross-listed in Labor and Human Resources.

**795 Management of New
Enterprise U G 5**

Forms of business entrepreneurship, taxation, securities, venture capital, purchase, financing, negotiations and marketing.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: Sr standing.

**796 Small Business Management:
The Growth Firm U G 3**

Growth strategies and policies for small firms with regional market opportunities. Pragmatic decision-making issues in real situations emphasized.

Au, Sp Qtrs. 1 3-hr cl. Prereq: Sr standing in Bus-Mgt or permission of instructor; 795 required of non-business majors.

801 Quantitative Methods in Business G 3

Derivation and application of analytical, mathematical, and statistical techniques to the solution of recurring management problems.

2 1½-hr cl. Prereq: Math 123 or equiv and Econ 442 or equiv.

801.01 Deterministic
Bartos and Henderson.

Su, Au, Wi, Sp Qtrs.

801.02 Stochastic
Park, Carbone and Gorr.

Au, Wi, Sp Qtrs.

801.03 Advanced Quantitative Methods
Bartos.

Sp Qtr.

801.04 Simulation in Business**802 Systems Research Organization
and Methodology G 3**

Modeling adaptive management systems of complex organizations such as health, business, and education. Howland.

1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs; subdivisions not repeatable.

**802.01 Introduction to Management Systems
Research**

Au Qtr.

802.02 Approaches to Systems Management
Wi Qtr.**802.03 Cybernetic Modeling of Adaptive
Management Systems**

Sp Qtr.

803 Formal Organization Theory G 3

An introduction to the various sociological and psychological theories which underlie the concept of the formal organization. Bobbitt and Kim.

Su, Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: 708, placement examination, or written permission of instructor.

**804 Organizational Development:
Strategies for Changing
Organizations G 3**

An analysis of the strategies and techniques that have been developed and employed in changing organizations. Kerr.

Sp Qtr. 2 1½-hr cl. Prereq: 803 or permission of instructor.

**805 Introduction to Administrative
Systems G 3**

The organization of an administrative system; types of systems and the problems involved. Babbitt and staff.

Wi Qtr. 2 1½-hr cl. Prereq: 803 or permission of instructor.

**830 Advanced Operations
Management G 3**

A critical survey and examination of the current trends and advanced problems in production and operations management, including analysis and policy formulation. Berry and Goodman.

Su, Wi, Sp Qtrs. Prereq: 730 or equiv, and 801.01

832 Design of Operating Systems G 3

A study of problems in the development of production and operations management, systems design, and operational control processes.

Sp Qtr.

**834 Advanced Topics in Capacity
Planning G 3**

A study of current research and mathematical models for selected capacity topics which may include capital input selection, capacity maintenance, facility design, inventory theory or location assignments. Ritzman.

Sp Qtr. 2 1½-hr cl. Prereq: 801.01 or permission of instructor, 730 or equiv.

**835 Advanced Topics in Operations
Analysis G 3**

Extensive applications of management science techniques for selected topics which may include aggregate planning, production sequencing, or cost analysis. Krajewski and Hardy.

Au Qtr. 2 1½-hr cl. Prereq: Written permission of instructor.

**860 Administration of Interpersonal
Behavior G 3**

Analysis of manpower programs and policies, value configurations, leadership, job design, motivation, and reward systems as these relate to individual performance and organizational effectiveness. Miljus.

Au, Wi, Sp Qtrs. Prereq: 708, placement examination, or equiv with written permission of instructor.

861 Seminar in Industrial Relations Administration G 3

Interaction and accommodation processes between institutionalized collective groups of employees and managers of goal oriented organizations located in both the private and public sectors of society. Beneki. Su, Wi Qtrs. 1 2-hr cl. Prereq: 860 or equiv, or permission of instructor.

862 Problems in Manpower Administration G 3

Theory and problems involved in selecting, developing, retaining, motivating, utilizing, and allocating manpower resources within complex organizations. Yaney and Campagna. Wi Qtr. 2 1½-hr cl. Prereq: 860 or equiv, or permission of instructor.

895 Development and Management of New Enterprise G 3

Lecture, discussion and case analysis focused on the concept, development, business analysis, financing and acquisition of new enterprise. Wi Qtr. 2 cl. Prereq: Bus Admin Core and permission of instructor.

911 Research Methods Organizational Behavior G 3

Research and theoretical advances in various aspects of social organization and behavior as they relate to the management of the complex organization. Behling. Wi Qtr. 1 2-hr cl. Prereq: Permission of instructor.

912 Analysis of Organization Theory G 3

Analysis and comparison of recent theories of organization; their integration with other theories. Sp Qtr. 1 2-hr cl. Prereq: Permission of instructor.

913 Individual Behavior in Formal Organizations G 3

Advanced discussions of theory and research on individual behavior, motivation, decision-making, job design, and reward system as they relate to individual and organizational performance. Kim. Au Qtr. 1 2-hr cl. Prereq: Permission of instructor.

914 Work Groups in Formal Organizations G 3

Theory and research on formal and informal structures in work groups and their influence on productivity and management. Bobbitt. Wi Qtr. 1 2-hr cl. Prereq: Permission of instructor.

915 Advanced Formal Organization Theory G 3

Theory and research on the structural characteristics of formal organizations with particular emphasis on the management of the organization as a dynamic system. Bobbitt. Sp Qtr. 1 2-hr cl. Prereq: Permission of instructor.

917 Seminar in Organizational Behavior G 3

A critical study of current research problems and trends in organizational behavior; builds on the concepts, models, and perspectives developed in 913, 914 and 915. Kerr. Au Qtr. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

918 Seminar in Integrative Management Research G 3

Analysis of the traditional, behavioral, and

socio-cultural forces and factors that affect organizational decision-making. Wi Qtr. 1 2-hr cl. Prereq: Permission of instructor.

919 History of Thought in Organizational Behavior and Management G 3

Seminar in the historical evolution of concepts, models, and perspectives in organizational behavior and the practice of management. Behling. Sp Qtr. 1 2-hr cl. Prereq: Permission of instructor.

930 Seminar in Production and Operations Management G 3

A critical analysis of research and emerging theories in the field with emphasis on their social, economic, and physical implications. Krajewski and Berry. Au Qtr. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

931 Seminar in Production and Operations Management G 3

Continuation of 930 including research methodology and the development of a research proposal. Krajewski and Ritzman. Wi Qtr. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

960 Seminar in Manpower and Industrial Relations Thought G 3

A consideration of manpower and industrial relations thought in terms of its historical and theoretical evolution in private and public sectors. Miljus and Yaney. Au Qtr. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs.

961 Seminar in Manpower and Industrial Relations Research G 3

A consideration of relevant manpower research and methodology, and individual development of research projects in private and public sectors. Benecki and Campagna. Wi Qtr. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs.

Business Administration: Marketing *Spel*

Office: 314 Hagerty Hall, 1775 College Road, 422-8808

496 Black Business Studies U 3

Methods of securing improved buying and employment opportunities for black people in small and large marketing institutions; guest speakers from the black community. Johnson. Au, Wi, Sp Qtrs. 1 2-hr cl, 1 hr arr. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

650 Marketing U G 4

Critical survey of field of marketing; structure, functions, policies, costs, and problems analyzed from consumer and other viewpoints; emphasis on principles, trends, and quantitative expression. Robeson, LaLonde and staff. Su, Au, Wi, Sp Qtrs. 4 cl. H650 (honors) may be available to students enrolled in an honors program or by permission of faculty. Prereq: Econ 400 or 402, or equiv.

750 Consumer Behavior U G 4

A review and synthesis of behavioral sciences applied to understanding consumer decision process; emphasis on the impact of consumer decisions upon the strategies of business, government, and consumer business cases. Leavitt.

Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 650 or equiv. Open only to srs and MBA students.

751 Managerial Marketing U G 4

Marketing policies and strategy; organization, demand analysis, product planning, pricing, physical distribution, and promotion from a managerial viewpoint.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 650 or equiv.

752 Cases in Managerial Marketing U G 4

Analysis of marketing policies and strategy, with emphasis on actual business cases.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 751.

753 Retail Management U G 4

Principles and methods of management as applied to retailing, including location, organization, personnel, buying, inventory control, selling and advertising, services, expenses, and profits.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 650 or equiv.

754† Wholesale Management U G 4

Nature, history, institutional compositions, competitive factors, economic and government aspects; scientific management of wholesale establishments, including functions of sales, internal operations, and operating expense control. Davis.

Wi Qtr. 4 cl. Prereq: 650 or equiv.

755 Promotional Strategy U G 4

Consumer behavior, fundamentals of communication, setting goals and objectives, creative strategy, media strategy, social and economic issues. Talarzyk, Leavitt, and staff.

Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 650 or equiv.

756 Credit Administration U G 4

Nature of credit; social and economic aspects of its use; management strategies in mercantile and consumer credit administration; competitive and legal constraints. Bartels.

Au, Wi Qtrs. 2 2-hr cl. Prereq: 650 or equiv.

757 Environment for International Business U G 4

International, foreign, and United States environments for global business; trade systems of different nations; management implications of cultural, social, and economic aspects of the environment. Bartels and Ricks.

Au, Sp Qtrs. 4 cl. Prereq: 650 or equiv.

758 Marketing Research U G 4

The role of research in the solution of marketing problems; emphasis on available data analysis and methods of the field of investigation.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 650 and Econ 442 or equiv.

759 Sales Management U G 4

The sales force and its managerial hierarchy.

Sp Qtr. 2 2-hr cl. Prereq: 650.

780 Micro-Logistics U G 4

Management of logistics activities of the firm from the viewpoint of both the provider and user of logistics system components.

Au, Wi Qtrs. 4 cl. Prereq: Bus-Mgt 700.

781 Analysis and Design of Logistics Systems U G 4

Analysis of internal and environmental factors affecting logistics systems and the effect of such factors on the development and implementation of integrated logistics systems.

Sp Qtr. 2 2-hr cl. Prereq: 780 and Econ 576.

807 Principles and Techniques of Marketing Research G 3

Principles of research methods in business and the use of research by management; scientific method in business, sampling theory, variable analysis, research cases. Ginter and Talarzyk.

Au Qtr. Prereq: Bus-Mgt 801.02. Not open to students with credit for Bus Adm 800.

850 Advanced Marketing G 3

A critical study of management of marketing activities in business enterprises, based primarily on comprehensive case analysis. Davis and staff.

Su, Au, Wi, Sp Qtrs. Prereq: 650.

852 Seminar in Specialized Areas of Marketing G 1-3

Au, Wi, Sp Qtrs. Prereq: 650 or equiv. Repeatable. Regular class meetings and group discussions of the subject matter embodied by one of the following areas in the field of marketing:

852.01 Advertising

852.02 Credits and Collections

852.03 Marketing Research

852.04 Retailing

852.05 Sales Management

852.06 Channels of Distribution

852.07 Marketing Theory

852.08 Logistics

852.09 Consumer Research

854 Consumer Behavior G 3

Development of the consumer decision process and its application to marketing strategy decisions. Blackwell, Leavitt, and Talarzyk.

Au, Wi, Qtrs. 2 1½-hr cl. Prereq: 850 or permission of instructor.

856 Multinational Business Administration G 3

Bases of management strategies in multinational companies, including legal forms, organizations, personnel, financing, pricing, antitrust, and risk. Bartels.

Wi Qtr. 2 1¼-hr cl.

857 Problems in International Business Administration G 3

Management decision-making in business enterprises operating in and between many nations. Bartels and Ricks.

Sp Qtr. 2 1½-hr cl. Prereq: 856.

858 Multivariate Analysis in Business Research G 3

Advanced consideration of correlational data analysis techniques (regression, discriminant analysis, factor analysis, canonical analysis). Emphasis is on comparison of techniques and underlying theory and assumptions. Ginter.

Sp Qtr. 1 3-hr cl. Prereq: 807 or equiv with written permission of instructor.

859 Topics in Cluster Analysis and Multidimensional Scaling G 3

Examination of the theoretical background behind multi-dimensional scaling and cluster analysis with the objective of developing sufficient understanding for problem-solving with the techniques. Deutscher. Sp Qtr. 1 3-hr cl. Prereq: 807, or equiv with written permission of instructor.

880 Physical Distribution Management G 3

Management of movement services and coordination of demand and supply patterns for optimization of physical systems in terms of cost and customer service. LaLonde.

Au Qtr. Prereq: 650, Bus-Mgt 630, and Econ 442, or equiv.

889 Theory of Business Logistics G 3

Critical examination of various theories of the structure and operation of logistics systems; research methodology for testing logistics theory and the application of logistics theory to contemporary logistics problems. Grabner and LaLonde.

Sp Qtr. Prereq: Permission of instructor.

950 Seminar in General Marketing G 3

A critical study of fundamental principles of marketing; special emphasis on the historical, macro, social, and theoretical aspects of the subject. LaLonde, Cullman, Talarzyk, and staff.

Wi Qtr. Prereq: 650 or equiv.

951 Seminar in General Marketing G 3

Continuation of 950.

Sp Qtr. Prereq: 950 or equiv.

955 Seminar in Contemporary Marketing Problems G 3

Review of current periodical literature and individual investigation by each student of a selected marketing problem of contemporary significance for seminar discussion and written report.

Au Qtr. Prereq: 650 or equiv. Repeatable to a maximum of 6 cr hrs.

959 History of Marketing Thought G 3

Evolution of marketing, concepts, terminology, principles, and theory; environmental and personal influences; analysis of marketing literature; marketing thought related to other social sciences. Bartels.

Au Qtr. 1 2-hr cl. Prereq: 650 or equiv and permission of instructor.

293 Individual Studies in Ceramic Engineering U 2-5

Individual study in ceramic areas utilizing library and laboratory facilities under the direction of a staff member.

Su, Au, Wi, Sp Qtrs. Prereq: 201. Repeatable to a maximum of 15 cr hrs.

294 Group Studies in Ceramic Engineering U 2-5

Group study in ceramic areas utilizing library and laboratory facilities under the direction of a staff member.

Su, Au, Wi, Sp Qtrs. Prereq: 201. Repeatable to a maximum of 15 cr hrs.

423 Fundamentals of Ceramic Engineering I: Materials U 3

Ceramic raw materials, including their geology, processing, physical and thermal behaviors, and industrial applications; introduction to mineral concepts and to the glassy and crystalline states. Russell.

Wi Qtr. 3 cl. Prereq or concur: Chem 121 or equiv.

424 Fundamentals of Ceramic Engineering II: Processing U 3

Preparation of ceramic materials and measurement and control of the principal process parameters, with emphasis on the relationship between structure, properties, and production economics. Russell.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: 201.

425 Heat Processes I U 3

Fuel sources and economy in ceramic drying, firing, or melting; heat release and utilization, temperature measurements and control. Shook.

Wi Qtr. 3 cl. Prereq: 201, Chem 121 or equiv.

426 Heat Processes II U 3

Psychrometry in drying operations and drier calculations; reactions of ceramic products during drying and firing; melting and crystallization control. Shook.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: 425.

489 Inspection Trip U 2

Visits to a variety of modern ceramic operations as arranged by the department throughout the academic year.

Su, Au, Wi, Sp Qtrs. 6 approved plant visits.

510 Thermodynamics of Ceramic Materials U G 3

Applications of thermodynamics to ceramic systems, including non-stoichiometry and interfacial relationships. Alexander.

Au Qtr. 3 cl. Prereq: Metal En 330.

511 Ceramic Rate Processes U G 3

Introduction to chemical kinetics and rate processes of ceramic materials with emphasis on interrelation of heat transfer and reaction rate.

Au Qtr. 3 cl. Prereq: Metal En 330.

512 Structure of Ceramic Materials U G 4

Structure of crystals, crystal chemistry and physics, chemical bonds and atomic coordination in inorganic, non-metallic materials; silicate and defect structures emphasized.

Wi Qtr. 4 cl. Prereq: Geol&Min 214.

Ceramic Engineering

Office: 177 Watts Hall, 2041 College Road, 422-2960

201 Introduction to Ceramic Engineering U 3

Introductory course for ceramic engineering students and a survey of ceramic products, their testing, and their uses for students in disciplines other than ceramic engineering. Shook.

Au, Wi, Sp Qtrs. 3 cl.

513 Property Development in Ceramics U G 4

Structural imperfections and atomic mobility at high temperatures; development of ceramic microstructure; mechanical, optical, and electrical properties with heat treatment. Shook.
Sp Qtr. 4 cl. Prereq: 512. Not open to students with credit for 613 or 614.

529 Ceramic Process and Product Control U 4

The application of control methods for processes and products.

Wi Qtr. 4 cl. Prereq: 424.

531 Glass Science and Technology U G 4

Structure and properties of glasses considered as undercooled liquids with emphasis on commercially important compositions. Drummond.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 512.

551 Ceramic Characterization U G 4

Application of analytical techniques and concepts including the analysis of structures, phases, and particulate matter by microscopic, diffractive, spectroscopic, chemical, and other approaches. Semler.

Wi Qtr. 4 cl. Prereq: 510.

552 Thermoanalytical Techniques U G 3

Analytical measurements of ceramic material thermal responses, including adiabatic and dynamic calorimetry, thermogravimetric analysis, effluent gas measurements and conventional DTA. Drummond.

Sp Qtr. 3 cl. Concur: 426.

589 Industrial Experience U 5

Ten weeks practical experience or its equivalent, including written report, in approved factory manufacturing ceramic wares.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs.

612 Ceramic Science: Mechanical Properties U G 3

Materials science in areas of brittle behavior, flaw sensitivity, and microstructural influences on mechanical properties. Shook.

Au Qtr. 3 cl. Prereq: Eng Mech 215.

613 Ceramic Science: Physical Processes U G 3

Materials science in areas of structural imperfections, surfaces, atomic mobility, phase transformations, reactions, grain growth, sintering, glass formation, and vitrification. Drummond.

Wi Qtr. 3 cl. Prereq: 511 and 512.

614 Ceramic Science: Physical Properties U G 3

Materials science in areas of thermal, optical, electrical, dielectric, and magnetic properties. Drummond.

Sp Qtr. 3 cl. Prereq: 613

621 Ceramic Design U G 5

The concepts of ceramic plant layout with regard to processing equipment; project planning and updating techniques. Shook.

Sp Qtr. 4 cl, 1 2-hr lab. Prereq: Eng Mech 215.

632 Ceramic Technology U G 4

The technology of porcelain enamels and surface coatings for metals.

Wi Qtr. 2 cl, 2 3-hr lab.

633 Refractories Technology U G 4

An in-depth study of the application, raw materials, formulation, and evaluation of industrial refractories. Lab experiments intended to enhance lecture coverage through practical experience.

Sp Qtr. 3 cl 1 3-hr lab. Prereq: Chem 121 or equiv with permission of instructor.

634 Ceramic Technology U G 4

The technology of fine grained ceramics, including traditional white wares, electronic and technical ceramic materials, and glazes. Russell.

Au Qtr. 2 cl, 2 3-hr lab.

671* Bioceramics U G 3

Evaluation and characterization of ceramic materials for medical applications.

Au, Wi, Sp Qtrs. 2 cl, 1 3-hr lab. Prereq: Elec Eng 670 or permission of instructor.

693 Individual Studies U G 1-7

Ceramic investigations in areas of advanced non-thesis research.

Su, Au, Wi, Sp Qtrs. Conf, library, and lab work.

Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

694 Group Studies U G 1-6

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

715 Thermoanalytical Techniques U G 3

Differential thermal analysis, thermogravimetric analysis and dynamic differential calorimetry of changes of state and reactions including mathematical and graphical data reduction.

Au Qtr. 2 cl, 1 3-hr lab. Prereq: Permission of instructor.

741 Chemistry and Chemical Processes of Glass Technology U G 3

The practical processes and equipment for producing commercial molten glasses, including the selection and handling of materials, charging, processes in the furnace, types of furnaces, furnace design, and operation. Drummond.

Au Qtr. 3 cl. Prereq: 512 and 531.

742† Glass Technology U G 4

Machine processes for forming pressed, blown, and flatware; annealing, tempering and decorating; plant visits to observe current commercial practice. Drummond.

Sp Qtr. 4 cl. Prereq: 741 or permission of instructor.

791 Ceramic Case Histories U G 3

Individual and group consideration of ceramic problems having technologic, industrial, and/or professional significance. Russell.

Sp Qtr. 3 cl.

852 Advanced Physics and Chemistry of Glasses G 3

Glass structure related to composition and liquid structure, equilibrium atomic configurations, energy relationships, kinetics of crystallization, and controlled devitrification in theory and in practice.

Sp Qtr. 2 cl. Prereq: 531, 614, or equiv with permission of instructor.

853 Advanced Ceramic Physics and Chemistry G 4

Reactions between solid phases, including sintering; the application of phase equilibria to ceramic problems; oxide ceramics and thermodynamics. Alexander.

Wi Qtr. 4 cl. Prereq: Permission of instructor.

854 Advanced Ceramic Physics and Chemistry G 4

Special properties of crystals; organic chemistry, ultrasonics, and thermodynamics applied to ceramics; nonoxide ceramics. Alexander.
Sp Qtr. 4 cl. Prereq: 614 or equiv with permission of instructor.

855 Advanced Ceramic Science G 4

Study of fine-grained ceramic materials for electronic and technical use, with emphasis on electrical phenomena and structure-property relationships. Russell.

Wi Qtr. 4 cl or conf. Prereq: 614 or equiv with permission of instructor.

856 Advanced Ceramic Science G 4

Modern engineering materials from the viewpoint of ceramic science; thermal behavior, ceramic-metal systems, sandwich and fiber composites, space material problems, plasma and vapor deposition technology.

Sp Qtr. 4 cl or conf. Prereq: 614 or equiv with permission of instructor.

889 Seminar in Ceramic Engineering G 1 or 2

Conference and reports on problems in ceramic science, technology and engineering; topics chosen to cover the development of the ceramic industry.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr. hrs.

893 Individual Studies G 1-6

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 6 cr hrs.

894 Group Studies G 1-6

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 6 cr hrs.

999 Research in Ceramic Engineering G Arr

Research for thesis or dissertation purposes only. Su, Au, Wi, Sp Qtrs.

Chemical Engineering

Office: 121 Chemical Engineering Building, 140 West 19th Avenue, 422-6591

200 Chemical Engineering and Process Calculations U 3

The application of physico-chemical principles to problems of the chemical industry; emphasis on graphical method, stoichiometry, heat, and material balances. Geankoplis, Heibel, Lynn, Slider, and Smith.

Au, Wi Qtrs. 2 cl, 2 comp lab hrs. Prereq or concur: Physics 131, Math 152, and Chem 122 or 205 or equiv; or permission of instructor.

201 Chemical Engineering and Process Calculations U 3

Continuation of 200.

Wi, Sp Qtrs. 2 cl, 2 comp lab hrs. Prereq: 200.

294 Group Studies U 1-6

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

420 Elements of Chemical Engineering—Transport Phenomena I U 4

Introduction to momentum, mass and heat transfer with emphasis on the analogies between the transports; numerous computation problems illustrating applications to chemical engineering practice. Brodkey.

Au, Sp Qtrs. 3 cl, 2 comp lab hrs. Prereq or concur: 201, Math 415 or 255, and Physics 132; or equiv with written permission of instructor.

442 Petroleum Geophysical and Drilling Methods U 3

Selected engineering problems associated with drilling oil and gas wells; geophysical exploration concepts; emphasis on drilling mud control and directional drilling analysis. Slider.

Wi Qtr. 3 cl. Prereq: Engr 3rd yr standing or geol & min 4th yr standing.

485 Inspection Trip U 2

These trips will give some practical knowledge of the magnitude of modern chemical engineering operations from a selected variety of industry.

Sp Qtr. 1 wk between Wi and Sp Qtrs. Repeatable to a maximum of 4 cr hrs. Travel and subsistence costs for the inspection trip will be borne by the student.

489 Chemical Engineering Practice Work U 5

The equivalent of ten weeks spent in a factory, or the engineering department of an industrial plant, or organized industrial work between 3rd and 4th year in chemical engineering. Haering and Smith.

Au Qtr. 10 weeks approved work experience. Prereq: Chem eng 3rd yr standing.

500 Chemical Engineering Process Calculations U 4

Real-time computation and techniques for simulating lumped-parameter and distributed chemical processes, unsteady state heat and mass transfer. Heibel.

Wi Qtr. 3 cl, 2 comp lab hrs. Prereq: Jr standing in chem eng or equiv with written permission of instructor.

508 Chemical Engineering Thermodynamics U G 3

Application of the fundamental concepts and laws of thermodynamics to problems of the chemical industry; stress on computational problem work. Hershey.

Au Qtr. 2 cl, 2 comp lab hrs. Prereq: 201.

509 Chemical Engineering Thermodynamics U G 3

Continuation of 508.

Wi Qtr. 2 cl, 2 comp lab hrs. Prereq: 508.

520 Transport Phenomena U G 3

Momentum, mass, and heat transfer with emphasis on the analogies between the transports; numerous computation problems illustrate applications to engineering practice. Brodkey.

Au, Sp Qtrs. 3 cl. Prereq: Math 255 or 415. Not open to students with credit for 420.

521 Elements of Chemical Engineering—Transport Phenomena II U G 3

Continuation of transport theory and introduction to radiation as applied to heat transfer; basic principles developed and illustrated with problems from chemical engineering practice. Sweeney.

Au, Wi Qtrs. 2 cl, 2 comp lab hrs. Prereq: 420 or 520; and concur En Graph 200.

522 Elements of Chemical Engineering—Transport Phenomena III U G 3

Continuation of the study of transport theory; emphasis on mass transfer and stagewise operations with applied computational problems. Geankoplis. Wi Qtr. 2 cl, 2 comp lab hrs. Prereq: 521 or equiv, or written permission of instructor. Not open to students with credit for 570.

523 Chemical Engineering Operations U G 4

The application of transport phenomena such as fluid, heat, and mass transfer to the chemical engineering operations of evaporation, distillation, drying, etc. Haering.

Sp Qtr. 3 cl, 2 comp lab hrs. Prereq or concur: 522, Chem 532, or permission of instructor.

543 Physical Analysis of Petroleum Reservoirs U G 2

Quantitative study of the physical nature of a petroleum reservoir; includes laboratory analysis of porosity, permeability, saturation, capillary pressure, and multiphase characteristics of reservoir rocks. Slider.

Wi Qtr. 1 cl, 1 4-hr lab. Prereq: 442 or permission of instructor.

570 Fundamentals of Mass Transport and Diffusion U G 3

Fundamental study of mass transport and diffusion in gases, liquids, and solids with applications in physical and biological sciences; primarily for students in physical, biological, and engineering sciences. Geankoplis.

Sp Qtr. 2 cl, 2 comp lab hrs. Prereq: 8 cr hrs of chem, 10 cr hrs of physics, and Math 254 or 221 or equiv; or permission of instructor. Not open to students with credit for 522.

571 Air Pollution U G 3

Sources and dispersion of air pollutants, air pollution control, air quality criteria, emission standards and regulations. Sweeney.

Sp Qtr. 3 cl. Prereq: Permission of instructor. Intended for students not enrolled in College of Engineering.

610 Chemical Engineering Kinetics U G 3

Chemical and engineering principles for the design and operation of chemical reactors; kinetics of simple homogeneous systems and introduction to heterogeneous catalysis. Syverson.

Sp Qtr. 2 cl, 2 comp lab hrs. Prereq: 522 or concur 570; and Chem 532.

625 Chemical Process Dynamics and Control I U G 4

Study of the dynamics and control of chemical processes; mathematical models of simple processes (including control) are derived and simulated using computers. Heibel.

Au Qtr. 3 cl, 4 lab hrs. Prereq: 523 or equiv or written permission of instructor; written permission of instructor for non-chem eng students.

630 Chemical Engineering Operations Laboratory U G 4-8

The fundamental laboratory course in the chemical engineering operations; laboratory investigation of the operating characteristics and efficiency of chemical engineering equipment as distillation, drying, filtration, etc. Haering.

Su Qtr. 5 conf, 7-19 lab hrs. Prereq: 523, or equiv with written permission of instructor.

640 Determination of Reservoir Parameters and Material Balance U G 5

Determination of petroleum subsurface reservoir thickness, porosity, and saturation from core analysis and logs; the prediction of reservoir behavior by material balance. Slider.

Sp Qtr. 5 cl. Prereq: Engr 3rd yr standing; or geol 4th yr standing and permission of instructor.

643 Flow of Gas and Oil in Subsurface Reservoirs U G 5

Fundamentals of oil and gas flow in porous media under steady state and unsteady state conditions; application of these fundamentals to well problems. Slider.

Au Qtr. 5 cl. Prereq: Engr 4th yr standing; or geol 4th yr standing and permission of instructor.

666 Transport Phenomena in Biological Engineering U G 3

Transport processes in biological materials (animal, vegetable, microorganism) and study of underlying chemical engineering transport principles involved. Geankoplis.

Sp Qtr. 3 cl. Prereq: Sr or grad standing in engineering or science.

671 Legal Aspects of Engineering U G 3

Basic legal concepts; the administrative process as exemplified by environmental regulation; patents, trade secrets; selected topics from the viewpoint of the engineer and scientist. Sweeney.

Au Qtr. 3 cl. Prereq: Sr standing in College of Engineering or in science or permission of instructor.

693 Individual Studies in Chemical Engineering U G 1-8

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

694 Group Studies in Chemical Engineering U G 1-6

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

714 Environmental Pollution Abatement U G 5

Problems, philosophies, principles, and methods of pollution abatement in the total environment; quantitative approaches to waste management in air, water, and land systems.

Wi Qtr. 5 cl. Prereq: Sr or grad majors in engineering or sciences. Not open to students with credit for Agri Eng 714, Civil En 518 or 714, Mech Eng 714, or Metal En 714. Cross-listed in the Depts of Agricultural Engineering, Civil Engineering, Mechanical Engineering, and Metallurgical Engineering.

726 Chemical Process Dynamics and Control II U G 3

Further development of process dynamics and control topics begun in 625. Heibel.

Wi Qtr. 3 cl. Prereq: 625 or permission of instructor.

743 Petroleum Production Investigations U G 1-10

Au, Wi, Sp Qtrs. Library, conf, and lab work. Prereq: 643. Repeatable to a maximum of 10 cr hrs for the course; either subdivision repeatable to a maximum of 10 cr hrs.

743.01 Engineering Problems of Petroleum and Natural Gas Exploration, Production, and Transportation.

Slider.

743.02 Design or Planning of Petroleum Field Development.

Slider.

750 Profession of Chemical Engineering U 1

The code of ethics of the chemical engineer, professional registration, responsibilities to the societies of the profession, to management, to labor, and as an administrator. Haering.

Au Qtr. 1 cl. Prereq: Chem eng sr standing.

760 Chemical Engineering Economy U G 3

Economic consideration in research; development, design, and manufacturing in the chemical process industry; cost estimation and economic optimization of chemical engineering operations and chemical processes. Lynn.

Au Qtr. 2 cl, 2 comp lab hrs. Prereq: 630 or permission of instructor.

761 Chemical Engineering Processes U G 3

Integration of fundamentals of chemistry, chemical engineering operations, thermodynamics, reaction kinetics, and economics for optimum design and operation of chemical process plants. Haering.

Au Qtr. 2 cl, 2 comp lab hrs. Prereq: Sr standing in chem eng or Chem.

762 Chemical Engineering Process Development U G 4

Library, laboratory, and pilot plant research and development of chemical processes of industrial potential justified by preliminary economic studies; preparation of optimum process flow sheets; plant design studies. Lynn.

Wi Qtr. 1 cl, 11 lab hrs. Prereq: 630 and 760.

763 Analysis and Organization of Special Project Problem Investigations U 2

Analysis of definite problems having the theoretical and practical application to the chemical industry; individual effort guided by a chemical engineering staff member. Syverson.

Wi Qtr. 6 hrs conf and lab. Prereq: Sr standing in chem eng.

764 Chemical Engineering Process Design U G 5

Process design studies on selected chemical processes encompassing a broad spectrum of fundamental engineering principles; optimization studies utilizing economic and technical simulation. Haering, Heibel, and Syverson.

Sp Qtr. 3 cl, 2 4-hr lab. Prereq: 762.

770 Applied Electrochemistry U G 3

The relationship between electrical and chemical energy as applied to chemical industries, discussed and illustrated by laboratory work. Lynn and Syverson.

Wi Qtr. 2 cl, 4 lab hrs. Prereq: Chem 532 or equiv with written permission of instructor.

771 Air Pollution U G 3

Sources of air pollutants, properties of small particles, chemistry of air pollution, dispersion and deposition of air pollutants, and air pollution control. Sweeney.

Sp Qtr. 3 cl. Prereq: Sr standing in the College of Engineering or permission of instructor.

773 Introduction to High Polymer Engineering U G 3

Engineering of polymerization and polymer forming processes based upon thermodynamics, transport phenomena, and reaction kinetics; relationship of

engineering properties of high polymers to molecular characteristics. Lynn.

Wi Qtr. 3 cl. Prereq: 610 and organic chem or permission of instructor.

775 Rheology of Fluids U G 3

Principles of rheology including the characteristics of non-Newtonian materials, measurements, rheological equations of state, viscometric flows, and applications to the flow of industrial materials. Brodkey.

Wi Qtr. 3 cl. Prereq: 420 or 520 or equiv with written permission of instructor.

776 Principles of Polymer Conversion Operations U G 3

Principles of thermodynamics, transport phenomena, polymer chemistry and physics will be related to polymer processing (converting high polymers) through application of mathematical and analytical approaches. Lynn.

Sp Qtr. 3 cl. Prereq: 773 and 775; or permission of instructor.

778 Nuclear Chemical Engineering U G 3

A study of physical, chemical, and economic principles applied to the processing of reactor fuels; examination of the separation requirements in relation to different fuel cycles. Smith.

Wi Qtr. 3 cl. Prereq: Nuclr En 660 or permission of instructor.

779 Chemical Engineering Experimental Design U G 3

Industrial and research experiments designed with special emphasis on reducing the number of experiments, interpreting final results, and ensuring against unknown factors. Hershey.

Au Qtr. 3 cl. Prereq: En Graph 200 or equiv, or permission of instructor.

781 Chemical Engineering Optimization U G 3

Description, analysis, and comparison of the techniques now in use in unimodel optimization; linear programming; geometric programming. Hershey.

Sp Qtr. 3 cl. Prereq: En Graph 200 or equiv, or permission of instructor.

782 Real-Time Chemical Process Computing U G 3

Theory and practice on application of real-time computers in data acquisition and control of chemical equipment and processes. Heibel.

Au Qtr. 2 cl, 2 comp lab hrs. Prereq: Sr standing in chem eng or equiv with written permission of instructor.

785 Special Project Problem Investigations U G 5 or 6

Solution of study problems, either new or continued from 763; extensive theoretical and/or experimental work followed by a comprehensive report.

Su, Au, Wi, Sp Qtrs. 15 hrs conf and lab. Prereq: 763 or permission of instructor. Repeatable to a maximum of 12 cr hrs.

790 Process Modeling and Simulation U G 3

Application of basic chemical engineering principles to construct mathematical models of industrial processes and the simulation thereof by digital and analog techniques. Heibel.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

801 Advanced Special Problems in Chemical Engineering G 1-15

A minor problems course covering the chemical engineering operation, instrumentation, thermodynamics, kinetics, the transport fields, and chemical technology.

Su, Au, Wi, Sp Qtrs. Conf, library and/or lab. Prereq: Satisfactory courses in field of problem undertaken and permission of instructor. Repeatable to a maximum of 15 cr hrs.

808 Advanced Chemical Engineering Thermodynamics G 3

Detailed discussion of the thermodynamic properties of pure compounds and mixtures; computational problem work emphasizes the application of thermodynamics in industrial problems. Hershey.

Sp Qtr. 3 cl. Prereq: 509 or equiv with written permission of instructor.

809 Advanced Chemical Engineering Thermodynamics G 3

Continuation of 808.

Wi Qtr. 3 cl. Prereq: 808.

812 Advanced Chemical Engineering Kinetics G 3

Chemical engineering kinetics from the viewpoint of industrial chemical processes. Syverson.

Au Qtr. 3 cl. Prereq: 523 and 610; or permission of instructor.

813 Advanced Chemical Engineering Kinetics G 3

Continuation of 812. Syverson.

Wi Qtr. 3 cl. Prereq: 812.

815 Advanced Chemical Engineering Science and Applications G 3

This series of courses presents advanced concepts of science and engineering as applied to the chemical engineering field under various topics.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Chem eng grad standing or permission of instructor. Repeatable to a maximum of 45 cr hrs; subdivisions not repeatable.

815.01 Advanced Mass Transfer—I**815.02 Advanced Mass Transfer—II****815.03 Advanced Distillation and Stage Processes****815.04 Extraction, Azeotropic, and Extractive Distillation****815.05 Advanced Heat Transfer—I**

Conduction, radiation and convection.

815.06 Advanced Heat Transfer—II

Condensation, boiling, design applications.

815.07 Drying, Humidification, and Dehumidification**815.08 Advanced Momentum Transfer—I**

Basic theory, laminar flow, and phenomenological turbulence.

815.09 Advanced Momentum Transfer—II

Statistical turbulence and mixing.

815.10 Advanced Momentum Transfer—III

Two-phase phenomena.

815.11 Advanced Combustion Principles**815.12 Advanced Instrumentation and Process Control of Chemical Plants****815.13 Design of Experiments**

Data handling and analysis, quality control, linear programming.

815.14 Advanced Process and Plant Design**815.15 New or Unusual Chemical Engineering Operations**

Examples: adsorption, atomolysis, dialysis exclusion, sublimation.

873 Advanced High Polymer Engineering G 3

Fundamental studies of polymer properties as related to and controlled by polymer structure; engineering of polymerization process to control polymer structure. Lynn.

Sp Qtr. 3 cl. Prereq: 773 or permission of instructor.

881 Seminar in Chemical Engineering G 2

Formal reports, lectures, and discussions of fundamentals and new developments in science and technology as related to chemical engineering.

Su, Au, Wi, Sp Qtrs. 2 conf hrs. Prereq: Grad standing in chem eng Repeatable to a maximum of 12 cr hrs.

999 Research in Chemical Engineering G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Chemical Physics

Office: 210 McPherson Chemical Laboratory, 140 West 18th Avenue, 422-7063

694 Group Studies U G 1-6

Special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

960 Seminar in Chemical Physics G 3

Topic to be announced.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: At least 2nd yr grad standing in chem phy program or written permission of instructor. Repeatable to a maximum of 9 cr hrs.

998 Research in Chemical Physics: Thesis G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

999 Research in Chemical Physics: Dissertation G Arr

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Chemistry

Office: 120 McPherson Chemical Laboratory, 140 West 18th Avenue, 422-2251; General Chemistry Office: 115 McPherson Chemical Laboratory, 140 West 18th Avenue, 422-6009

101 Elementary Chemistry U 5

A course in the principles of chemistry; the chemistry of the more important elements and compounds.

Au Wi, Sp Qtrs. 4 cl, 3 lab hrs. Prereq: Eligibility to enroll in Math 116. Not open to students with credit for 121, H201, or 204. Safety glasses must be worn in lab.

102 Elementary Chemistry U 5

Continuation of 101; a terminal sequence in chemistry for students requiring only two courses in chemistry; special attention is given to the compounds of carbon. Au, Wi, Sp Qtrs. 4 cl, 3 lab hrs. Prereq: 101. Not open to students with credit for 122, H202, or 205. Safety glasses must be worn in lab.

121 General Chemistry U 5

A general course in fundamental chemical principles. Su, Au, Wi, Sp Qtrs. 4 cl, 3 lab hrs. Prereq: One unit of high school chem, and eligibility to enroll in Math 150. Not open to students with credit for 102, H201, or 204. Safety glasses must be worn in lab.

122 General Chemistry U 5

Continuation of 121; the chemistry of the most important non-metals and of chemical reactions in solutions.

Su, Au, Wi, Sp Qtrs. 4 cl, 3 lab hrs. Prereq: 121; or completion of 101 with a grade of A or B and eligibility to enroll in Math 150. Not open to students with credit for H202, or 205. Safety glasses must be worn in lab.

123 General Chemistry U 5

Continuation of 122; the chemistry of the metals including introductory quantitative analysis.

Su, Au, Wi, Sp Qtrs. 3 cl, 6 lab hrs. Prereq: 122. Safety glasses must be worn in lab.

H201 General Chemistry U 5

The principles of chemical measurement for selected students.

Au Qtr. 3 cl, 4 lab hrs. Prereq: Superior performance on placement examination and Math 151 or equiv. Not open to students with credit for 101, 121, or 204. Safety glasses must be worn in lab.

H202 General Chemistry U 5

Continuation of 201; the properties of matter and quantitative analysis.

Wi Qtr. 3 cl, 4 lab hrs. Prereq: 201. Safety glasses must be worn in lab.

H203 General Chemistry U 5

Continuation of 202; systematic chemistry of the elements.

Sp Qtr. 3 cl, 4 lab hrs. Prereq: 202. Safety glasses must be worn in lab.

204 Principles of Chemistry U 4

Fundamental principles of chemistry for engineering students with at least two quarters of college physics and of college mathematics.

Au, Wi, Sp Qtrs. 3 cl, 3-hr lab. Prereq: Engineer 1st or 2nd yr curriculum; 1 unit of high school chem; prereq or concur Math 153 and Physics 133. Safety glasses must be worn in lab.

205 Principles of Chemistry U 4

Continuation of 204.

Au, Wi, Sp Qtrs. 3 cl, 3-hr lab. Prereq: 204. Safety glasses must be worn in lab.

211 Quantitative Analysis U 3

A general course in quantitative analysis; gravimetric, volumetric, and instrumental analysis; primarily for those students with interest in biological and medical sciences.

Su, Au, Wi Qtrs. 2 cl, 5-8 lab hrs. Prereq: 123 or equiv. Safety glasses must be worn in lab.

212 Quantitative Analysis U 3

Continuation of 211.

Sp Qtr. 2 cl, 5-8 lab hrs. Prereq: 211. Safety glasses must be worn in lab.

221 Quantitative Analysis U 5

The fundamental course in quantitative chemical analysis for students majoring in chemistry.

Au, Sp Qtrs. 3 cl, 6 lab hrs. H221 (honors) may be available to students enrolled in an honors program; others with permission of dept. Prereq: 123 or equiv. Safety glasses must be worn in lab.

235 Survey of Organic Chemistry U 5

Terminal course covering the fundamental aspects of aliphatic and aromatic chemistry.

Au, Sp Qtrs. 4 cl, 4-hr lab. Prereq: 102 or 122. Not open to students with credit for 241, 243, 245, or 251. Safety glasses must be worn in lab.

241 Organic Chemistry U 3

The first half of a two-quarter course in fundamental organic chemistry designed for non-majors in chemistry or students in preparation for high school teaching.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 123. Not open to students with credit for 235 or 251.

242 Organic Chemistry U 3

Continuation of 241.

Su, Wi, Sp Qtrs. 3 cl. Prereq: 241. Not open to students with credit for 235 or 252.

243 Organic Chemistry Laboratory U 3

A preparation of a series of typical organic compounds, such as are studied in 241-242, their purification, and a study of their properties.

Su, Au, Wi, Sp Qtrs. 9 lab hrs. Prereq or concur: 241. Not open to students with credit for 235, 245, or 254. Safety glasses must be worn in lab.

244 Organic Chemistry Laboratory U 3

Continuation of 243.

Su, Wi, Sp Qtrs. 9 lab hrs. Prereq: 243; prereq or concur 242. Not open to students with credit for 235, 246, or 255. Safety glasses must be worn in lab.

245 Organic Chemistry Laboratory U 2

A preparation of a series of typical compounds, such as those studied in 241 and 242, and a study of their properties.

Au, Wi, Sp Qtrs. 6 lab hrs. Prereq or concur: 241. Not open to students with credit for 235, 243, or 254. Safety glasses must be worn in lab.

246 Organic Chemistry Laboratory U 2

Continuation of 245.

Su, Wi, Sp Qtrs. 6 lab hrs. Prereq: 245; prereq or concur 242. Not open to students with credit for 235, 244, or 255. Safety glasses must be worn in lab.

251 Organic Chemistry U 3

A fundamental course in chemistry designed for chemistry majors and chemical engineers.

Au Qtr. 3 cl. Prereq: 123. Not open to students with credit for 241.

252 Organic Chemistry U 3

Continuation of 251.

Wi Qtr. 3 cl. Prereq: 251. Not open to students with credit for 232 or 242.

253 Organic Chemistry U 3

Continuation of 252.

Sp Qtr. 3 cl. Prereq: 252.

254 Organic Chemistry Laboratory U 3

The preparation, purification, characterization, and study of the properties of typical organic compounds. Wi Qtr. 6 or 9 lab hrs. H254 (honors) may be available to students enrolled in an honors program; others with permission of dept. Prereq or concur: 251. Not open to students with credit for 243-244. Safety glasses must be worn in lab. *1 cl 8 lab hrs*

255 Organic Chemistry Laboratory U 3

Continuation of 254.

Sp Qtr. 6 or 9 lab hrs. H255 (honors) may be available to students enrolled in an honors program; others with permission of dept. Prereq: 254, or concur 252. Safety glasses must be worn in lab. *1 cl 8 lab hrs*

294 Group Studies U 3-5

Special studies in chemistry.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

501 Recent Advances in Chemistry U G 5

Designed for high school science teachers; recent developments in the theory of valence, particle nature of matter, colloids, high polymers, nuclear chemistry, fuels and photosynthesis.

Su, Au, Qtrs. 5 cl. Prereq: Academic Year Science Institute students only; 30 cr hrs in chem. Not for grad credit to students majoring in chem.

521 Physical Chemistry U G 5

A study of the fundamental principles of physical chemistry arranged for students in the biological sciences.

Sp Qtr. 5 cl. Prereq: 242-244 or 252-255, or equiv, Math 120.04, 122, 132, 152 or 502; and Physics 113 or 133. Not for grad credit to students majoring in chem.

531 Physical Chemistry U G 3

The fundamental course in physical chemistry.

Au Qtr. 3 cl. H531 (honors) may be available to students enrolled in an honors program; others with permission of dept. Prereq: 212 or 221 or equiv, Physics 113 or 133 and Math 254; prereq or concur Math 255; concur 551 recommended for chem majors. Not for grad credit to students majoring in chem.

532 Physical Chemistry U G 3

Continuation of 531.

Wi Qtr. 3 cl. H532 (honors) may be available to students enrolled in an honors program; others with permission of dept. Prereq: 531; concur 552 recommended for chem majors. Not for grad credit to students majoring in chem.

533 Physical Chemistry U G 3

Continuation of 532.

Sp Qtr. 3 cl. H533 (honors) may be available to students enrolled in an honors program; others with permission of dept. Prereq: 532. Not for grad credit to students majoring in chem.

541 Physical Chemistry Laboratory U G 3

Sp Qtr. 1 cl, 8 lab hrs. Prereq or concur: Chem eng 3rd yr standing, 521 or 533 or equiv. Protective glasses must be worn.

551 Physical Chemistry Laboratory U G 2

Quantitative measurements of phenomena of chemical interest and the application of chemical principles to their interpretation.

Au, Wi Qtrs. 6 lab hrs. Prereq or concur: 531. Protective glasses must be worn.

552 Physical Chemistry Laboratory U G 2

Continuation of 551.

Au, Wi Qtrs. 6 lab hrs. Prereq: 551; prereq or concur 532. Protective glasses must be worn.

585 Research Principles in Chemistry U 1-5

Independent chemical investigation under the direction of a faculty member, culminating in written and oral reports.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 15 cr hrs in chem at the 200 level or above; written permission of instructor under whose direction the student will work. Repeatable to a maximum of 20 cr hrs.

587 Principles of Instrumental Analysis U G 5

Application of physical-chemical principles to problems of chemical analysis; laboratory practice in basic instrumental techniques.

Sp Qtr. 3 cl, 6 lab hrs. Prereq: 532, 552, and prereq or concur 533. Safety glasses must be worn in lab.

601 Chemical Information Science U G 1

Chemical library usage for information retrieval and introduction to modern methods of chemical information handling.

Au Qtr. 1 cl. Prereq: 212 or 242 or 255, or equiv.

616 Organic and Inorganic Micro Quantitative Analysis U G 4

Application of various micro chemical techniques for solving problems in organic and inorganic chemistry.

Sp Qtr. 1 cl, 9 lab hrs. Prereq: 221, 242-244 or 252-255, or equiv. Safety glasses must be worn in lab.

621 Chemical Spectrophotometry U G 4

Application of infrared, visible, ultraviolet spectrophotometers, atomic emission and absorption spectrographs to problems involving inorganic and organic molecular structure, analysis, equilibria, and reaction rates.

Wi Qtr. 2 cl, 6 lab hrs. Prereq or concur: 531. Protective glasses must be worn.

623 Chemical Instrumentation U G 3

Background theory and laboratory applications in the use of electrical and electronic instruments in chemical research.

Sp Qtr. 2 cl, 4 lab hrs. Prereq: 533, prereq or concur Physics 133, Math 255 or equiv. Not open to students with credit for 871.

631 Structure Determination and Identification of Organic Compounds U G 3

Application of chemical and physical methods in structure determination of organic compounds.

Au Qtr. 1 cl, 9 lab hrs. Prereq: 253 or equiv. Safety glasses must be worn in lab.

632 Physical Methods in Organic Chemistry U G 3

Selected topics in bonding, molecular orientation, and reactivity of organic compounds and metastable intermediates with emphasis on physical methods of approach.

Sp Qtr. 3 cl. Prereq: 253 and 533 or equiv.

635* Chemistry of the Carbohydrates U G 3

Au Qtr. 3 cl. Prereq: 242 or 252 or equiv. Repeatable to a maximum of 6 cr hrs with permission of instructor.

a—Monosaccharides. (Given in even numbered years.)

b—Oligosaccharides and polysaccharides. (Given in odd-numbered years.)

651 Advanced Inorganic Chemistry I U G 3

An introduction to the concepts and chemical systems of inorganic chemistry, including atomic structure, the periodic table, molecular structure and bonding, ionic crystals, defect solid state and electron deficient compounds.

Wi Qtr. 3 cl. Prereq or concur: 532 or permission of instructor. Not open to students with credit for 751.

652 Advanced Inorganic Chemistry II U G 3

The chemistry of the transition elements; coordination compounds, organometallics, noble gases, representative elements, and lower boron hydrides; acid-base theories.

Sp Qtr. 3 cl. Prereq: 651, prereq or concur 533, or permission of instructor. Not open to students with credit for 752.

661 Biochemistry U G 3

A survey of biochemistry for the superior advanced undergrad or the beginning grad student who does not necessarily plan to do grad research in biochemistry.

Prereq: 251, 252, 253 or equiv with grade of A or B; 531, 532, 533 or equiv with grade of A or B.

661.01 Biochemistry

Wi Qtr. 3 cl.

661.02 Biochemistry

Sp Qtr. 3 cl.

671 Nuclear, Radio, and Radiation Chemistry U G 3

Nuclear properties, nature of radioactivity, radioactive decay and growth, interactions of radiation with matter, applications.

Au Qtr. 3 cl. Prereq: 533 or equiv.

675 X-Rays and Crystal Structure U G 4

An introduction to the methods of X-ray crystal analysis; theory of symmetry of crystals and of diffraction will be discussed and applied.

Wi Qtr. 3 cl, 3 lab hrs. Prereq: Math 255, Physics 113 or 132, 133, or equiv.

676 Colloid Chemistry U G 3

Modern theories of colloidal behavior; absorption and surface phenomena; physical-chemical methods for the characterization of proteins, high polymers, and inorganic colloids.

Wi Qtr. 3 cl. Prereq: 533.

678 Chemistry of the Earth's Atmosphere U G 3

Chemistry of the upper and lower atmosphere; application of kinetics and thermodynamic principles to prediction of rates and mechanisms of transformations, and atmospheric pollutant control.

Sp Qtr. 3 cl. Prereq: 532.

693 Individual Studies U G 1-15

A qualified student may conduct a minor investigation in chemistry.

Su, Au, Wi, Sp Qtrs. Conf, library, and lab. Prereq: Satisfactory courses in field of the problem and

permission of instructor. Repeatable to a maximum of 60 cr hrs.

694 Group Studies U G 3-5

Designed for students to pursue advanced special studies in chemistry.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

733 Chemistry of Bio-Organic Catalysts U G 3

Structure of organic catalysts and the mechanism of their reactions.

Au Qtr. 3 cl. Prereq: 253 or 831; concur 533.

751 Advanced Inorganic Chemistry I U G 3

An intermediate treatment of the concepts and chemical systems of inorganic chemistry, including symmetry, and correlation of spectra and structure with bonding.

Au Qtr. 3 cl. Prereq: Permission of instructor or an undergrad degree with a major in chem. Not open to students with credit for 651.

752 Advanced Inorganic Chemistry II U G 3

An intermediate discussion of organometallic compounds and low oxidation state metalloids.

Wi Qtr. 3 cl. Prereq: 751. Not open to students with credit for 652.

753 Advanced Inorganic Chemistry III U G 3

Equilibria and mechanisms of inorganic chemical reactions, including substitution, electron transfer, metal ion promoted processes, and applications to homogenous catalysis.

Sp Qtr. 3 cl. Prereq: 652 or 752. Not open to students with credit for 653.

755 Inorganic Chemistry Laboratory U G 3

Preparative techniques of inorganic chemistry including the use of liquified gases, aqueous and non-aqueous solution, anhydrous and oxygen-free systems, fusion reactions, etc.

Sp Qtr. 9 lab hrs. Prereq or concur: 533. Safety glasses must be worn in lab. Not open to students with credit for 655.

H783 Honors Course U 3-5

A qualified student conducts an independent investigation in chemistry culminating in a thesis and an oral examination.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the chem courses and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Satisfactory completion of at least 8 cr hrs is required of candidates for an undergrad degree with distinction in chem. Repeatable to a maximum of 15 cr hrs.

821 Advanced Analytical Chemistry G 3

Advanced level discussion of electrochemical principles and mass transport processes; discussion of applications to organic and inorganic systems.

Au Qtr. 3 cl. Prereq: 533, 631; or permission of instructor.

822* Advanced Analytical Chemistry G 3

Kinetic and thermodynamic processes of fundamental importance in the characterization of chemical species.

Wi Qtr. 3 cl. Prereq: 821 or permission of instructor.

823†* Advanced Analytical Chemistry G 3

Advanced course in the principles of measurement of the interaction of electromagnetic radiation with matter.

Sp Qtr. 3 cl. Prereq: 822 or permission of instructor.

831 Advanced Organic Chemistry G 3

An advanced course in the fundamental principles of chemistry covering the aliphatic hydrocarbons and their derivatives.

Au Qtr. 3 cl. 831-832-833 to be taken in sequence.

832 Advanced Organic Chemistry G 3

An advanced course in the fundamental principles of chemistry covering alicyclic, hydroaromatic, and aromatic compounds.

Wi Qtr. 3 cl. Prereq: 831.

833 Advanced Organic Chemistry G 3

An advanced course in the fundamental principles of chemistry covering a survey of heterocyclic compounds, carbohydrates, proteins, and enzymes.

Sp Qtr. 3 cl. Prereq: 832.

835 Advanced Organic Chemistry Laboratory G 3 or 5

An advanced course in fundamental reactions and procedures with emphasis on recent advances in technique.

Su Qtr. 9 lab hrs. Prereq: Permission of student's grad adviser. Safety glasses must be worn in lab.

836 Advanced Organic Chemistry Laboratory G 3 or 5

Continuation of 835.

Su Qtr. 9 lab hrs. Prereq: Permission of student's grad adviser. Safety glasses must be worn in lab.

851 Advanced Inorganic Chemistry G 3

A survey of modern theories of valence and their application to the problems of structural inorganic chemistry.

Au Qtr. 3 cl. Prereq: 533; 652 or 752 or permission of instructor.

852 Advanced Inorganic Chemistry G 3

A detailed treatment of the chemistry of the transition elements from the standpoint of molecular and atomic structure, electronic spectra, magnetism, and ligand-field theory.

Wi Qtr. 3 cl. Prereq: 851 or permission of instructor.

861 Quantum Chemistry I G 3

Basic quantum mechanics as a foundation for quantum chemistry; postulates, operators, eigenfunctions, eigenvalues, and Schroedinger wave equations; one-dimensional problems including the harmonic oscillator.

Au Qtr. 3 cl. Prereq: 533, Physics 133, Math 255 or 415 or equiv.

862 Quantum Chemistry II G 3

Angular momentum; matrix elements and representations; the hydrogenic atom; perturbation and variation methods, electron spin, and the helium atom; atomic structure and multiplet theory.

Wi Qtr. 3 cl. Prereq: 861 or equiv.

863 Quantum Chemistry III G 3

Electronic structure of molecules; hydrogen molecule and ion, methane, ethylene, benzene, etc.; molecular orbital, valence bond, and self-consistent field methods.

Sp Qtr. 3 cl. Prereq: 862.

866 Electronic Spectra and Structure of Molecules G 3

Application of quantum mechanics to the description and interpretation of molecular spectroscopic data with an emphasis on electronic transitions of polyatomic molecules.

Wi Qtr. 3 cl. Prereq: 862 or permission of instructor. Not open to students with credit for 981.

873 Advanced Structure Determination by Diffraction Methods G 3

Advanced theory and application of diffraction methods to the solution of structural problems with emphasis on training in the use of modern techniques.

Sp Qtr. 1 cl, 6 lab hrs. Prereq: 675 or equiv with written permission of instructor.

875 Chemical Kinetics I G 3

Fundamentals of chemical kinetics in homogeneous liquid and gaseous systems.

Au Qtr. 3 cl. Prereq: 533.

876 Chemical Kinetics II G 3

Continuation of 875; elementary reactions; chain reactions; fast reaction methods; reaction rates in heterogeneous systems.

Wi Qtr. 3 cl. Prereq: 875.

877†* Radiation and Photochemical Kinetics G 3

The physical and chemical effects of the absorption of radiant energy, with emphasis on kinetics and mechanism.

Sp Qtr. 3 cl. Prereq: 875.

881 Thermodynamics I G 3

Introduction to thermodynamics; emphasis on training in the use of thermodynamics as a tool for solving chemical problems.

Wi Qtr. 3 cl. Prereq: 875 or equiv.

882 Statistical Thermodynamics G 3

An introduction to statistical thermodynamics, including quantum statistics, entropy and the third law, statistical-spectroscopic calculation of thermodynamic functions of gases, chemical equilibria, and vapor pressure.

Sp Qtr. 3 cl. Prereq: 881.

883 Thermodynamics II G 3

Continuation of 881, covering the thermodynamics of systems of variable composition; experimental determination and use of partial molal quantities, activity coefficients, ionization constants; galvanic cells.

Au Qtr. 3 cl. Prereq: 881.

885 Colloquium in Chemistry G 1

A discussion of current research in chemistry; all divisions.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Grad standing in chem. Required every qtr of all registered grad students in chem.

894 Group Studies G 3 or 4

Provides an opportunity for innovation and experimentation on new problems in chemistry.

Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 8 cr hrs.

941 Theoretical Organic Chemistry G 3

An advanced course in a special topic in organic chemistry; topic to be announced.

Au Qtr. 3 cl. Prereq: 2nd yr grad standing, 831-832, or permission of instructor.

942 Theoretical Organic Chemistry G 3

An advanced course in a special topic in organic chemistry; topic to be announced.
Wi Qtr. 3 cl. Prereq: 2nd yr grad standing, 831-832, or permission of instructor.

943 Theoretical Organic Chemistry G 3

An advanced course in a special topic in organic chemistry; topic to be announced.
Sp Qtr. 3 cl. Prereq: 2nd yr grad standing, 831-832, or permission of instructor.

990 Seminar on Topics in Biochemistry G 3

Advanced topics in the biological aspects of chemistry.
Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

991 Seminar in Analytical Chemistry G 3

Topic to be announced.
Au Qtr. 3 cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

992 Seminar in Organic Chemistry G 3

Topic to be announced.
Au, Wi, Sp Qtrs. 3 cl. Prereq: Chem 2nd yr grad standing and 831, 832 or equiv and permission of instructor. Repeatable to a maximum of 12 cr hrs.

995 Seminar in Inorganic Chemistry G 2 or 3

Topic to be announced.
Sp Qtr. 2 cl. Prereq: 651 and 652 or equiv and permission of instructor. Repeatable to a maximum of 9 cr hrs.

996 Seminar in Theoretical Chemistry G 3

Advanced topics in theoretical chemistry including quantum mechanics of molecular wave functions, energies, and rate processes, and quantum and statistical mechanics of condensed phases.
Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 861, 862, 863; or equiv. Repeatable to a maximum of 9 cr hrs.

997 Seminar in Physical Chemistry G 3

Topic to be announced.
Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 2nd yr grad standing in Physchem. Repeatable to a maximum of 9 cr hrs with permission of instructor.

999 Research in Chemistry G Arr

Research for thesis or dissertation purposes only.
Su, Au, Wi, Sp Qtrs.

103 Elementary Modern Chinese U 5

Continuation of 102. N. Ching.
Sp Qtr. 5 cl. Prereq: 102.

104 Elementary Modern Chinese U 5

Four hundred additional characters, further combination of characters in three quarters; complex sentence structure; readings adapted from modern Chinese literature. E. Ching.
Au Qtr. 5 cl. Prereq: 103 or written permission of instructor.

112 Intensive Chinese U 5, 10 or 15

Elementary modern Chinese (Mandarin) for students desiring comprehensive knowledge and skills of Chinese in shortest possible time.
Su Qtr. 15 cl. Prereq: Permission of dept. Full time of student and full fees required. Students with credit for 101 or the equiv may not register for more than 10 cr hrs. Students with credit for 101 and 102 or equiv may not register for more than 5 cr hrs. Not open to students with credit for 103 or 111. No audit.

114 Elementary Chinese Conversation and Composition U 3

Oral drills and sentence making exercises based upon the vocabulary and sentence patterns acquired in 101 and 102, and concurrently in 103; conducted predominantly in Chinese.
Sp Qtr. 3 cl. Prereq: 102 or written permission of instructor.

205 Intermediate Modern Chinese U 5

Continuation of 104. E. Ching.
Wi Qtr. 5 cl. Prereq: 104 or written permission of instructor. Not open to students with credit for 105.

206 Intermediate Modern Chinese U 5

Continuation of 205. E. Ching.
Sp Qtr. 5 cl. Prereq: 205 or written permission of instructor. Not open to students with credit for 106.

212 Intensive Chinese U 5, 10 or 15

Continuation of 103 or 112, with a gradual shift in emphasis from the spoken to the written language; selected graded readings, writing, and composition.
Su Qtr. 15 cl. Prereq: 103 or 112, and written permission of dept. Full time of student and full fees required. Equiv of 104, 205 (or 105), and 206 (or 106). Students with credit for 104 or the equiv may not register for more than 10 cr hrs. Students with credit for 104 and 105 or 205 or the equiv may not register for more than 5 cr hrs. Not open to students with credit for 106 or 206.

214 Intermediate Chinese Conversation and Composition U 3

Exercises in conversation and composition based upon materials used in 104 and 205, and concurrently in 206; conducted primarily in Chinese.
Wi Qtr. 3 cl. Prereq: 114 and 205, or equiv with written permission of instructor.

230 Elements of Chinese Culture: Early Period U 5

Survey of major Chinese intellectual trends, institutions, literature and art from antiquity to Six Dynasties.
Au Qtr. Taught in English.

231 Elements of Chinese Culture: Middle Period U 5

Chinese institutions, philosophical trends, religion, art, and literature from Six Dynasties to the end of Ch'ing.
Wi Qtr. 5 cl. Taught in English.

Chinese

Office: 276 Dieter Cunz Hall of Languages, 1841 Millikin Road, 422-5816

101 Elementary Modern Chinese U 5

Basic elements of Modern Chinese (Mandarin); the four tones, sentence structure, and Chinese characters (of which 600 will be learned in three qtrs). N. Ching.
Au Qtr. 5 cl.

102 Elementary Modern Chinese U 5

Continuation of 101. N. Ching.
Wi Qtr. 5 cl. Prereq: 101.

232 Elements of Chinese Culture: Modern Period U 5

Modern Chinese culture as reflected in family life, language, literature, art, etc. Ch'en.

Sp Qtr. 5 cl. Taught in Engl.

251 Chinese Literature in Translation: Early Period U 5

Historical, philosophical, and poetical classics of China.

Au Qtr. 5 cl.

252 Chinese Literature in Translation: Middle and Modern Periods U 5

Masterpieces of late classical poetry and the vernacular novel; representative works of modern fiction, poetry, and drama.

Wi Qtr. 5 cl.

283 Chinese Calligraphy U 3

Techniques of writing Chinese characters with a brush; practice in different styles from oracle bone to grass.

Wi Qtr. 3 cl. Knowledge of Chinese not required.

507 Advanced Modern Chinese I U G 5

Reading of contemporary prose and verse, presentation of oral and written reports, drill in tone and intonation, practice in translation.

Au Qtr. 5 cl. Prereq: 206 or equiv with written permission of instructor. Not open to students with credit for 609.

508 Advanced Modern Chinese II U G 5

Continuation of 507.

Wi Qtr. 5 cl. Prereq: 507 or permission of instructor. Not open to students with credit for 610.

509 Advanced Modern Chinese III U G 5

Continuation of 508.

Sp Qtr. 5 cl. Prereq: 508 or permission of instructor. Not open to students with credit for 611.

514 Advanced Chinese Conversation and Composition U 3

Practice in conversation, discussion, oral reports, and short speeches at an advanced level; use of various taped materials; theme-writing exercises; conducted entirely in Chinese.

Au Qtr. 3 cl. Prereq: 214 and 508, or permission of instructor.

601 Classical Chinese I U G 3

Selected readings from representative authors of classical times. Hsueh.

Au Qtr. 3 cl. Prereq: 206 or equiv with written permission of instructor. Not open to students with credit for 501.

602 Classical Chinese II U G 3

Continuation of 601. Hsueh.

Wi Qtr. 3 cl. Prereq: 601 or equiv with written permission of instructor. Not open to students with credit for 502.

603 Classical Chinese III U G 3

Continuation of 602. Hsueh.

Sp Qtr. 3 cl. Prereq: 602 or equiv with written permission of instructor. Not open to students with credit for 503.

641 History of Chinese Thought U G 5

Detailed examination of the major Chinese philosophies; readings from selected Chinese texts. Chang.

Sp Qtr. 2-2-hr cl. Not open to students with credit for 671.

680 Introduction to Chinese Linguistics U G 3

A general investigation of the history, phonology, morphology, syntax, and lexicon of the Chinese language. Hsueh.

Au Qtr. 3 cl. Prereq: 103 and Linguist 601, or permission of instructor.

681 History of The Chinese Language U G 3

An investigation of the relations between modern Chinese and its earlier stages, ancient and archaic Chinese. Hsueh.

Wi Qtr. 3 cl. Prereq: 680 or permission of instructor. Not open to students with credit for 627.

683 Study of The Chinese Writing System U G 5

A critical study of the origin, classification, composition, and development of the Chinese writing system, including problems in simplification and alphabetization. E. Ching.

Au Qtr. 3 cl. Prereq: 103 or permission of instructor. Not open to students with credit for 620 or 684.

690 Chinese Translation Workshop U G 3

Investigations of problems and techniques of translating Chinese into English and English into Chinese; practice of translation of selected passages; individual assignments and group discussion.

Sp Qtr. 2 cl. Prereq: 509 and 603, or equiv with written permission of instructor.

693 Individual Studies U G 1-5

Directed study to meet individual research needs of students in area studies and East Asian programs.

Su, Au, Wi, Sp Qtrs. Prereq: 509 or 603, and written permission of instructor. Repeatable to a maximum of 15 cr hrs. Not a substitute for regular language courses.

694 Group Studies U G 1-5

Investigation of minor problems in Chinese language and literature.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. Not a substitute for regular language courses.

698† Study Tour U G 15

Intensive work in conversation and reading in order to prepare for the tour; while abroad only Chinese will be spoken; some formal instruction given daily by the tour leaders.

Su Qtr. 15 cl, 5 wks at OSU, 5 wks abroad. Prereq: 15 cr hrs in Chinese language or equiv with written permission of instructor.

751† Selected Readings in Scholarly Chinese Texts I U G 3

Academic writings in the humanities and social sciences by modern Chinese scholars in both the wen-yen and pai-hua styles. Lao.

Au Qtr. 3 cl. Prereq: 509 or permission of instructor.

752† Selected Readings in Scholarly Chinese Texts II U G 3

Continuation of 751. Lao.

Wi Qtr. 3 cl. Prereq: 751 or permission of instructor.

753† Selected Readings in Scholarly Chinese Texts III U G 3

Continuation of 752. Lao.

Sp Qtr. 3 cl. Prereq: 752 or permission of instructor.

**754 History of Chinese Literature:
Early Period U G 3**

Chinese literature from the earliest times to the end of Han (early 3rd century); investigation of various aspects of the classical tradition. Chan.

Au Qtr. 2 cl. Prereq: Written permission of instructor. Not open to students with credit for 654.

**755 History of Chinese Literature:
Middle Period U G 3**

Chinese literature from Wei (3rd century) to the end of T'ang (10th century); literary trends and achievements of the Six Dynasties and the Sui-T'ang Period. Ch'en.

Wi Qtr. 2 cl. Prereq: Written permission of instructor. Not open to students with credit for 655.

**756 History of Chinese Literature:
Pre-Modern and Modern
Period U G 3**

Chinese literature from Sung (10th century) to the present; rise of vernacular short story, drama, and the novel; modern writers since the Literary Revolution. Li.

Sp Qtr. 2 cl. Prereq: Written permission of instructor. Not open to students with credit for 656.

761†* Modern Chinese Poetry U G 3

Lectures and readings covering major poets since 1919. Ch'en.

Au Qtr. 3 cl. Prereq: 756 or permission of instructor. Not open to students with credit for 704.

762†* Modern Chinese Prose U G 3

Studies of various types of prose literature of the May Fourth Movement and the Communist period. Lao.

Wi Qtr. 3 cl. Prereq: 756 or permission of instructor. Not open to students with credit for 705.

763†* Modern Chinese Fiction U G 3

Works by major authors before and after 1949. Li.

Au Qtr. 3 cl. Prereq: 756 or permission of instructor. Not open to students with credit for 706.

764†* Modern Chinese Drama U G 3

Lectures on and readings in works by major 20th century playwrights including Hung Shen and Ts'ao Yu. Ch'en.

Sp Qtr. 3 cl. Prereq: 756 or permission of instructor.

782†* Chinese Phonology U G 3

Mandarin phonology and Chinese dialectology. Hsueh.

Sp Qtr. 3 cl. Prereq: 681 or permission of instructor. Not open to students with credit for 624 and 785.

H783 Honors Course U 3-5

A program of reading arranged for each student, with individual conferences, reports and honors thesis.

Au, Wi, Sp Qtrs. Prereq: 4th yr standing; a grade of A in at least half of Chinese courses taken and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Failure to receive a mark of S in this course is a disqualification for special honors. Open only to candidates for BA in Chinese.

784†* Chinese Syntax U G 3

An investigation of the syntactic structure of Mandarin Chinese. E. Ching.

Sp Qtr. 3 cl. Prereq: 680 or 681 or permission of instructor. Not open to students with credit for 626.

**800 Chinese Bibliography
and Research Methods G 3**

An introduction to bibliographies and reference works in the Chinese humanities; general and specific problems for research. Lao.

Sp Qtr. 3 cl. Prereq: 509 and 603, or equiv with written permission of instructor. Not open to students with credit for 707.

804 Advanced Classical Chinese I G 3

Designed for further study of the syntax and vocabulary of classical Chinese; texts are selected from literature, history, and philosophy. Graham.

Au Qtr. 3 cl. Prereq: 603 or equiv with written permission of instructor.

805 Advanced Classical Chinese II G 3

Continuation of 804. Graham.

Wi Qtr. 3 cl. Prereq: 804.

806 Advanced Classical Chinese III G 3

Continuation of 805. Graham.

Sp Qtr. 3 cl. Prereq: 805.

871* Traditional Chinese Poetry G 5

Lectures and readings from ancient odes and songs and the later *shih* and *tz'u* poetry. Ch'en.

Au Qtr. 2 2-hr cl. Prereq: 754 and 755, or permission of instructor. Not open to students with credit for 703 or 771.

872†* Traditional Chinese Prose G 5

Lectures on and readings in various types of non-fiction prose in *ku-wen* and *yu-lu-t'i* styles of early times. Lao.

Wi Qtr. 2 2-hr cl. Prereq: 754 and 755, or written permission of instructor. Not open to students with credit for 772.

873†* Traditional Chinese Fiction G 5

Lectures and readings in classical and vernacular fiction. Li.

Wi Qtr. 2 2-hr cl. Prereq: 754 and 755, or permission of instructor. Not open to students with credit for 701 or 773.

874* Traditional Chinese Drama G 5

A lecture and reading course in Yuan, Ming, and Ch'ing drama. Ch'en.

Sp Qtr. 2 2-hr cl. Prereq: 754 and 755, or permission of instructor. Not open to students with credit for 702 or 774.

875†* Chinese Literary Criticism G 5

The historical development of critical theories, with concentration on major critics. Ch'en.

Wi Qtr. 2 2-hr cl. Prereq: 3 Chinese literature courses at the 700 level or above, or equiv with written permission of instructor.

876†* Chinese Poetics G 5

An intensive study of Chinese poetic theories, traditional and modern, in relation to the creative process; consideration of several non-Chinese theories of poetry. Ch'en.

Wi Qtr. 2 2-hr cl. Prereq: 761 and 871, or equiv with written permission of instructor.

879 Seminar in Chinese Literature G 3-5

An intensive reading course in Chinese literature with a selected topic for each offering and research projects for individual students; topic to be announced.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

882* Studies in Chinese Historical Phonology G 5

Critical study of the rhyming dictionaries, the reconstruction of the phonology of old Chinese and its relations to modern Chinese dialects. Hsueh. Sp Qtr. 2 2-hr cl. Prereq: 782 or permission of instructor.

884* Studies in Chinese Historical Syntax G 3

Problems of Chinese historical syntax; grammatical structures of classical Chinese; syntactic rules found in selected texts from various ancient writings. E. Ching. Wi Qtr. 3 cl. Prereq: 784 or permission of instructor.

889† Seminar in Chinese Linguistics G 3-5

Topics include the history of Chinese linguistics and related areas, specific studies in Chinese dialects, etc. Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

998 Research in Chinese: Thesis G Arr

Research for thesis purposes only. Su, Au, Wi, Sp Qtrs.

999 Research in Chinese: Dissertation G Arr

Research for dissertation purposes only. Su, Au, Wi, Sp Qtrs.

Circulation Technology

School of Allied Medical Professions

Office: 443 School of Allied Medical Professions Building, 1583 Perry Street, 422-7261

400 The Aseptic Environment U 5

An introduction to the aseptic environment with emphasis on the student's function within this environment as a member of the medical-surgical team. Mandl.

Wi Qtr. 2 cl, 2 3-hr lab. Prereq: Permission of instructor.

410 Applied Circulation Technology — Cardiovascular U 5

The presentation of cardiovascular physiology, pathology and treatment of cardiovascular disease including the use of extracorporeal devices. Riley. Sp Qtr. 5 cl. Prereq: Written permission of instructor.

411 Applied Circulation Technology — Renal U 5

The presentation of renal physiology, pathology and treatment of renal disease including the use of extracorporeal devices. Mandl.

Wi Qtr. 5 cl. Prereq: Written permission of instructor.

412 Applied Circulation Technology — In Vitro Lab U 4

The study of various extracorporeal devices and techniques in a controlled in vitro laboratory

environment. Toth and Riley.

Sp Qtr. 1 6-hr lab, 1 2-hr conf. Prereq: Written permission of instructor.

413 Applied Circulation Technology — In Vivo Lab U 4

The study of various extracorporeal devices and techniques in a controlled in vivo laboratory environment. Riley and Toth.

Sp Qtr. 1 6-hr lab, 1 2-hr conf. Prereq: Written permission of instructor.

420 Circulatory Technology Instrumentation U 5

The application of mechanical and electronic principles to the instrumentation unique to circulation technology with emphasis on design and selection of equipment. Toth.

Wi Qtr. 3 cl, 2 2-hr lab. Prereq: Written permission of instructor.

550 Research Methodology U 7

Lectures and demonstrations relating circulation technology to research methodology with emphasis on new developments in this area. Toth.

Au, Wi, Sp Qtrs. 5 2-hr cl. Prereq: 410 and 420, or permission of instructor; concur 551.

551 Research Methodology Laboratory U 8

Application of circulation technology methods to the solution of research problems. Toth.

Au, Wi, Sp Qtrs. 5 4-hr clinical experiences. Prereq: 410 and 420, or permission of instructor; concur 550.

560 Life Support Systems U 5

Topics of current interest in clinical dialysis with laboratories dealing with techniques and procedures not available or different from those seen clinically. Mandl.

Su, Au, Wi, Sp Qtrs. 1 3-hr cl, 1 5-hr lab. Prereq: 410 and 420, or written permission of instructor; concur 561.

561 Life Support Systems Clinical Experience U 8

Clinical experience in the application of circulation technology methods to dialysis and other support systems. Mandl.

Su, Au, Wi, Sp Qtrs. 20 hrs clinical experience per wk. Prereq: 410 and 420, or permission of instructor; concur 560.

570 Surgical Support Systems U 7

Lectures and demonstrations relating circulation technology to the clinical use of extracorporeal circulation devices and monitoring instrumentation in surgery. Riley and Mandl.

Su, Au, Wi, Sp Qtrs. 5 2-hr cl. Prereq: 410 and 420, or permission of instructor; concur 571.

571 Surgical Support Systems Clinical Experience U 8

Clinical experience in the preparation and operation of extracorporeal circulation devices and monitoring instrumentation in support of surgery. Mandl.

Su, Au, Wi, Sp Qtrs. 20 hrs clinical experience per wk. Prereq: 410 and 420, or permission of instructor; concur 570.

590 Acid Base Physiology U 2

Review and use of the fundamentals of acid base physiology to understand clinical acid base disturbances. Riley.

Sp Qtr. 2 cl. Prereq: Physiol 311 and 312 and written permission of instructor.

593 Individual Studies in Circulation Technology U 1-5

Clinical, laboratory, or research experiences by individual arrangement for qualified students.
Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

595 Seminar in Circulation Technology U 1

Conferences, group discussions and presentations of selected topics. Mandl.
Su, Au, Wi, Sp Qtrs. 1 cl. Prereq: Written permission of instructor. Repeatable to a maximum of 6 cr hrs.

City and Regional Planning

Office: 289 Brown Hall, 190 West 17th Avenue,
422-6046

300 Outlines of American City Planning U 3

Introduction to American city planning processes; development of urban problems and related urban planning systems since 1900. Gerckens.
Au, Sp Qtrs. 2 cl.

301 Outlines of City Planning History U 3

Evolution of concepts of urban form and structure in planned communities from the earliest times to 1900 A.D. Complements 300. Gerckens.
Wi Qtr. 2 cl. Not open to students with credit for 742.

701 Introduction to Urban Planning Practice U G 3

Review of urban planning as practiced by local governments today, including plan-making and plan-implementation phases. Voss.
Au Qtr. 3 cl.

702 Urban Planning Graphics U G 1

Rudiments of graphic techniques employed most frequently in practice; basic drafting, printing processes, report preparation, and related subjects. Geiger.
Wi Qtr. 1 cl, 2 lab hrs. Prereq: Grad standing in C&R plan, or permission of instructor.

731 Outlines of Urban Design U G 3

Urban design as an area of specialization in urban planning; theories and processes in urban design; evaluation of criteria. Koebel.
Sp Qtr. 3 cl. Prereq: Grad standing in C&R plan or arch or sr standing in arch or larch, or permission of instructor.

732 Urban Planning and Urban Form: Psychological Functions U G 3

Urban planning for the organization and character of the physical environment as significant variables in psychological processes basic to effective individual functioning; emphasis on implications for urban design. Sims.
Au Qtr. 3 cl. Prereq: Grad standing in C&R plan or arch, or sr standing in arch or larch, or permission of instructor.

733 Urban Planning and Urban Form: Social Functions U G 3

Urban planning for the organization and character of the physical environment as significant variables in social processes basic to effective individual functioning; emphasis on implications for urban design. Sims.
Wi Qtr. 3 cl. Prereq: Grad standing in C&R plan or arch, or sr standing in arch or larch, or permission of instructor.

734 Research and Analytic Methods for Urban Designers U G 3

Use of research and analytic methods in assisting the urban designer in problem formulation, search, prediction, evaluation, and choice. Sims.
Sp Qtr. 2 cl. Prereq: Grad standing in C&R plan, or sr standing in arch or larch, or permission of instructor.

742 History of City Planning to 1900 A.D. U G 5

Readings, research, and seminars on the history of city planning from the earliest settlements to 1900 A.D.; complements 743. Gerckens.
Wi Qtr. 3 cl. Prereq: Grad standing, or undergrad honors standing and permission of instructor. Not open to students with credit for 301.

743 American City Planning Since 1900 A.D. U G 5

Readings, research, and seminars on American city planning since the turn of the century; complements 742. Gerckens.
Au, Sp Qtrs. 3 cl. Prereq: Grad standing, or undergrad honors standing and permission of instructor. Not open to students with credit for 300 or 811.

752 Urban Planning for Housing U G 3

Introduction to urban planning issues related to housing with regard to urban structure, markets, reform, suburbanization, new towns, urban renewal, and rehabilitation. Fisch.
Au Qtr. 3 cl. Prereq: Grad standing in C&R plan, or permission of instructor.

753 Outlines of Regional Planning U G 3

State, national, and regional planning; components of regional development; regional analysis and design. Lande.
Au Qtr. 3 cl. Not open to students with credit for 813.

770 Introduction to Quantitative Methods in Urban Planning U G 4

Introduction of mathematical models in urban planning; descriptive statistics, probability, decision theory, and use of digital computer. Hanson.
Au, Wi Qtrs. 4 cl. Prereq: Grad standing in C&R plan or permission of instructor.

771 Applications of Quantitative Methods in Urban Planning U G 4

Applications of statistical analysis in urban planning; hypothesis testing and parameter examination methods; computer analysis of urban planning data. Hanson.
Sp Qtr. 4 cl. Prereq: 770.

775 Urban Transportation Planning U G 4

Discussion and examples of urban transportation planning processes, emphasizing models of locational and travel behavior, development and evaluation of alternatives, and citizen reaction and participation. Mills.
Au Qtr. 4 cl. Prereq: Grad standing, or with written permission of instructor. Not open to students with credit for 751. Cross-listed in Civil Engineering.

**793 Individual Studies
in Urban Planning U G 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor.

**794 Group Studies in Urban
Planning U G 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

**812 Theory of City
and Regional Planning G 3**

Planning processes; the general plan; formulating goals; land development policies and decisions; alternative urban and regional forms; role and scope of planning. Mills.

Au Qtr. 3 cl. Prereq: Grad standing in C&R plan.

**815 Case Studies in Urban Planning
for Housing G 4**

Review of empirical studies in urban planning for housing including aspects of density, spatial production, housing services, and price formation. Fisch.

Au Qtr. 2 cl, 2 lab hrs. Prereq: 752 or permission of instructor.

**816 Seminar in Urban Planning
for Housing G 3**

Presentation and discussion of research related to urban planning for housing, including theoretical studies, modeling, simulation, and statistical testing. Fisch.

Wi Qtr. 3 cl. Prereq: 752 or permission of instructor.

**820 State Planning of Regional
Growth and Development G 3**

Rationale for state intervention in regional economics, growth centers and neoclassical models, development planning in foreign countries; comparison and evaluation of models and evidence. Lande.

Wi Qtr. 3 cl. Prereq: 753 or equiv with written permission of instructor.

821 Regional Planning Studio G 5

Application of economic and environmental analysis to regional development projects.

Sp Qtr. 2 cl, 3 lab hrs. Prereq: 753 or 820 or permission of instructor. Repeatable to a maximum of 10 cr hrs.

**832 Urban Planning Data
and Forecasting G 5**

Sources of information, data handling, forecasting, and basic studies in urban planning. Von Rabenau and Jusenius.

Sp Qtr. 3 cl, 6 lab hrs. Prereq: Grad standing in C&R plan.

**833 Consequence Analysis
in Urban Planning G 3**

Urban planning studies using cost-benefit, cost-effectiveness, systems analysis, and PPBS approaches. Czamanski.

Sp Qtr. 2 cl, 2 lab hrs. Prereq: Grad standing in C&R plan, or permission of instructor.

**834 Decision Analysis in Urban
Planning G 3**

Application of decision theory and analysis to case studies in urban planning. Hanson.

Sp Qtr. 3 cl. Prereq: 770.

**845 Physical Elements
of Urban Development G 5**

Physical components of urban areas; residential, commercial, industrial, pedestrian, and vehicular circulation; other community facilities; analysis of design criteria and standards. Geiger and Koebel.

Au, Sp Qtrs. 3 cl, 3 lab hrs. Prereq: Grad standing in C&R plan.

851 Urban Precinct Planning G 5

Preparation of detailed physical development plans for a small section of a city. Sims and Koebel.

Au Qtr. 3 cl, 6 lab hrs. Prereq: 832 and 845.

852 Urban Project and Policy Planning G 5

Identification of options among planning policies and projects; development of analyses to aid in making choices between options in urban development. Mills and Czamanski.

Wi Qtr. 2 cl, 9 lab hrs. Prereq: 832 and 845.

853 The Urban General Plan G 5

Current practice in preparation of the urban general plan; laboratory exercise in the preparation of a general plan for an urban community. Geiger.

Wi Qtr. 3 cl, 6 lab hrs. Prereq: 845, 862, 880, or permission of instructor.

861 Land-Use Controls G 4

Legal basis of land-use controls in the United States, provisions, procedures and issues in zoning, subdivision regulation, urban renewal, building and housing codes, and acquisition of real property for public use. Simmons, Murphy, and Pearlman.

Wi, Sp Qtrs. 3 cl. Prereq: Grad standing in C&R plan.

862 City Planning Administration G 5

Administration of official urban planning agencies; zoning administration; subdivision review practices; capital improvement programming; budget and work program preparation. Widner, Rainey and Pearlman.

Au, Sp Qtrs. 4 cl. Prereq: Grad standing in C&R plan.

**863 Urban Issues and the
Professional Planner G 3**

Examination of alternative conceptions of the urban problems of American society; implications of each conception for the urban planning profession. Voss.

Sp Qtr. 3 cl. Prereq: Grad standing in C&R plan.

864 Urban Planning Theory Seminar G 3

Review of contemporary urban planning programs; analyses of objectives and strategies. Voss.

Wi Qtr. 4 cl. Prereq: 761, 851, 852, and 862.

865 Social Policy Law G 4

Studies of law and social policy; topic areas vary, including health delivery and income maintenance systems. Pearlman.

Wi Qtr. 4 cl.

866 Environmental Planning Law G 4

The interaction between law and environmental planning and protection. Pearlman.

Au Qtr. 4 cl. Prereq: 861 or equiv with written permission of instructor.

**870 Workshop in Quantitative Methods
in Urban Planning G 3**

Workshop application of quantitative planning methods to an urban or regional planning problem. Fisch and Hanson.

Au, Wi, Sp Qtrs. 1 cl, 3 lab hrs. Prereq: 770 or permission of instructor. Repeatable to a maximum of 9 cr hrs.

880 Spatial Models in Urban Planning G 3

Urban planning applications of theories of spatial equilibrium and rent theory; impacts on spatial distribution of zoning, property taxation, and infrastructural investment. Von Rabenau and Lande. Wi Qtr. 3 cl. Prereq: Grad standing in C&R plan or permission of instructor.

881 Urban Planning for Public Services and Facilities: Metropolitan Expansions and New Towns G 3

Urban planning for population change impacts on public services and facilities; public policy issues of investment in, and the economics of, new towns and municipal expansion. Von Rabenau. Au Qtr. 3 cl. Prereq: 880.

882 Urban Planning for Public Services and Facilities G 3

Criteria and procedures for urban planning investment decisions; application to fire control, health services, transportation, and recreation facilities. Von Rabenau. Wi Qtr. 3 cl. Prereq: 880.

899 Interdepartmental Seminar G 1-5

See Interdepartmental Seminars.

990 Urban Planning Practicum G 1-5

Supervised field experience in urban planning; analysis and critique of field experience.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing in C&R plan. Repeatable to a maximum of 5 cr hrs.

999 Research in City and Regional Planning G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

Civil Engineering

Office: N470 Hitchcock Hall, 2070 Neil Avenue, 422-2771

202 Introduction to Surveying U 4

An introduction to surveying theory, practice and professionalism.

Au, Wi Qtrs. 3 cl, 1 3-hr lab. Prereq: Physics 131. Not open to students with credit for Geod Sci 202 or 512. Cross-listed in Geodetic Science.

294 Group Studies in Civil Engineering U 1-5

Special topics in civil engineering; the particular topic, credit hours, and the instructor will be announced in the quarter previous to the one in which the course will be offered.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs.

301 Survey Measurements and Computations U 5

Significant figures; errors and mistakes; theoretical analysis and propagation of errors in measurements; specification derivation; plane surveying computations including angles, directions, coordinates, areas application.

Wi Qtr. 4 cl, 1 3-hr lab. Prereq: 202 or Geod Sci 202. Not open to students with credit for 404 or Geod Sci 301. Cross-listed in Geodetic Science.

302 Field Surveying Principles U 4

Field data acquisition; planning and execution of field surveys; elevation angle and distance measurements; survey instrument construction and use; topographic and othersite detail surveys.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 301 or Geod Sci 301. Not open to students with credit for Geod Sci 302. Cross-listed in Geodetic Science.

303 Surveying History U 3

Development of surveying and mapping methods, equipment, land ownership and land survey systems with emphasis on systems in the United States, particularly Ohio.

Au Qtr. 3 cl. Prereq or concur: 202 or Geod Sci 202. Not open to students with credit for Geod Sci 303. Cross-listed in Geodetic Science.

405 Observational Analysis U 4

Theory and application of observational analysis. Godfrey and Wu.

Wi, Sp Qtrs. 4 cl. Prereq: 202 and Math 254.

406 Fundamentals of Civil Engineering Analysis U 4

Application of numerical methods to problems in civil engineering. Chen and Sandhu.

Au, Sp Qtrs. 4 cl. Prereq: Math 254, and En Graph 200.

407 Engineering and Construction Surveys U 5

Route and utility location and surveying; construction surveys for various structures and engineering projects; earthwork computations, hydrographic surveys; mine and tunnel surveys; industrial surveys.

Sp Qtr. 4 cl, 1 3-hr lab. Prereq: 202 or Geod Sci 202. Not open to students with credit for 504 or Geod Sci 407. Cross-listed in Geodetic Science.

408 Boundary Relocation Principles U 5

Legal principles for establishment of property lines; acquisition and evaluation of survey evidence of property lines; Ohio State survey laws; conduct of property resurveys.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: 302 and 303 or Geod Sci 302 and 303. Not open to students with credit for Geod Sci 408. Cross-listed in Geodetic Science.

409 Preserving Survey Evidence U 4

Preparation of written and graphical property descriptions, including statements concerning measurements; astronomical observations for accurate direction; survey monumentation standards; recording procedures, state plane coordinate systems.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 408 or Geod Sci 408. Not open to students with credit for Geod Sci 409. Cross-listed in Geodetic Science.

410 Environmental Pollution and Control U 3

Environmental pollution: the causes and control of air, water, and land pollution in relation to their effects on health, aesthetics, economics and ecology. Rubin.

Wi Qtr. 3 cl. Prereq: Chem 101 or equiv with written permission of instructor. Not open to civil en majors or students with credit for 714.

413 Fluid Mechanics U 4

Fluid properties; fluid statics; flow concepts; continuity, energy, and momentum equations; dimensional analysis and dynamic similarity; viscous effects; drag; basic pipe flow; laboratory demonstrations, experiments, and reports. Bedford and Ricca.

Au, Sp Qtrs. 3 cl, 1 2-hr lab. Prereq: Eng Mech 410.

431 Structural Engineering Principles U 4

Design planning, structural forms, analysis of statically determinate structures, approximate analysis of statically indeterminate structures.

Au, Wi Qtrs. 4 cl. Prereq: Eng Mech 420.

451 Civil Engineering Materials U 4

Composition and structure of civil engineering materials; elastic, plastic and viscous behavior under various environmental and loading conditions. Majidzadeh.

Au, Sp Qtrs. 3 cl, 1 3-hr lab. Prereq: Eng Mech 210; prereq or concur Eng Mech 420.

460 Professional Aspects of Civil Engineering U 1

Structure of the civil engineering profession; interaction of civil engineers with the education process, their clients, other professions and the public. Jones and Smith.

Au, Wi, Sp Qtrs. 1 cl. Prereq: 3rd yr standing in civil en.

470 Transportation Engineering U 4

Objectives and functions of transportation; interaction between land use and travel patterns; service characteristics of transportation modes; selected design topics.

Au, Wi, Qtrs. 3 cl, 1 3-hr lab. Prereq: 405, En Graph 200, and Eng Mech 410.

505 Photogrammetry and Photo Interpretation U 4

Principles and applications of photogrammetry and photo interpretation.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: Physics 131 or equiv with written permission of instructor. Not open to students with credit for 402 or Geod Sci 505 or 525. Cross-listed in Geodetic Science.

507 Surveying and Platting of Development Plans U G 4

Surveying of public and private physical site development plans; land use controls and other factors influencing land subdivision: surveying and platting of typical development plans.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 301 or Geod Sci 301. Not open to students with credit for 602 or Geod Sci 507. Cross-listed in Geodetic Science.

508 Fundamentals of Geodetic Surveying U G 5

Principles of establishment and extension of major control; principles of construction and use of angular, distance, elevation difference and gravity measuring devices.

Au Qtr. 4 cl, 1 3-hr lab. Prereq: 202 or Geod Sci 202. Not open to students with credit for Geod Sci 508 or 515. Cross-listed in Geodetic Science.

510 Principles of Hydraulics U G 3

Fluid properties; hydrostatics; flow concepts; continuity, energy, and momentum equations and applications; flow measurements, pipe and channel flow. Ricca.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Math 151 and Physics 111 or 131. Not open to students with credit for 413. Majority of course will be conducted using self-paced programmed instruction manual.

516 Water Resources Engineering U G 4

Pipe systems, introduction to open channel flow, basic hydrology, demographic studies, water supply, and wastewater flows.

Au, Wi Qtrs. 4 cl. Prereq: 405, 413, and En Graph 200.

518 Environmental Quality U G 4

Introduction to environmental quality; air pollution; solid waste disposal; water quality and treatment; wastewater characteristics and treatment. Sykes.

Wi, Sp Qtrs. 4 cl. Prereq: 516 and Chem 205. Not open to students with credit for 714.

519 Applied Hydraulics U G 3

Applied fluid mechanics including pressure probes, open and closed conduit flow measurement and devices; turbo-machinery, homologous units, characteristic curves; water hammer; surge; conduits; laboratory experiments. Bedford and Ricca.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: 516.

521 Water Distribution and Wastewater Collection U G 3

Design of water supply collection, transmission and distribution systems; design of sewage and storm water collection and disposal systems.

Au Qtr. 2 cl, 1 3-hr lab. Prereq: 519.

530 Elementary Structural Engineering U G 3

Structural analysis of simple structures; introduction to reinforced concrete.

Sp Qtr. 3 cl. Prereq: Eng Mech 420. Not open to students majoring in civil en.

531 Structural Analysis U G 4

Deflections in trusses, beams, and frames; solution of indeterminate structures by methods of consistent deformations, and moment distribution.

Au Qtr. 4 cl. Prereq: 431 or 530.

532 Structural Steel Design U G 4

Design of steel structures.

Au, Sp Qtrs. 3 cl, 1 2-hr lab. Prereq: 534.

534 Behavior of Structural Elements U G 4

Mechanics of beams, shear center, unsymmetrical bending, columns, plastic bending, limit loads, properties of structural metals, proportioning beams for flexure.

Wi, Sp Qtrs. 3 cl, 1 2-hr lab. Prereq: 431.

535 Basic Reinforced Concrete Design U G 5

Analysis and proportioning of reinforced concrete members. Bishara and Chen.

Au, Wi Qtrs. 5 cl. Prereq: 534. Not open to students with credit for 632.

540 Civil Engineering Systems U G 4

Basic concepts and methods of systems engineering and applications to civil engineering problems in transportation and water resources planning, structural design, and construction management. Whitlatch.

Au, Wi Qtrs. 4 cl. Prereq: 405 and 406.

541 Fire Safety Design in Buildings U G 4

Study of fire hazards in buildings; development of fire, safety performance criteria; analysis of fire protection systems and evaluation of building operation plans. Bletzacker.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 4th yr standing in civil en or arch.

542 Control of Quality in Construction Systems U G 3

Analysis of evaluative techniques based upon codes and standards and the application of these techniques to control the quality of construction systems. Bletzacker.

Au Qtr. 3 cl. Prereq: 4th yr standing in civil en.

551 Elementary Soil Mechanics U G 4

Basic and engineering soil properties; fluid flow through soils; compaction, effective stresses and compression.

Au Qtr. 3 cl, 1 3-hr lab. Prereq or concur: Eng Mech 420. Not open to students majoring in civil en.

552 Construction Materials U G 4

Composition, properties, and production of portland cement concrete, bituminous materials, and bituminous mixtures. Majidzadeh.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 451.

553 Soil and Structural Mechanics U G 3

Properties of soils and structural materials and their application to analysis of stresses and displacements in soil masses and structural members. Sandhu.

Au Qtr. 3 cl. Prereq: Eng Mech 420.

554 Geotechnical Engineering U G 4

Properties of natural soil deposits and subsoil exploration; engineering solutions to problems of slope stability, foundation settlement and earth pressure.

Au, Sp Qtrs. 4 cl. Prereq: 451 and Eng Mech 420.

576 Civil Engineering Economics and Planning U G 4

Engineering economics and theories of planning applied to private and public civil works.

Wi, Sp Qtrs. 4 cl. Prereq: 470 and 540.

582† Mining Systems Engineering U 3

Fundamentals of mining systems for bedded, massive, vein, and surface deposits.

Au Qtr. 3 cl. Prereq: 552 and Geol&Min 100.

603 Remote Sensing of Environment U G 4

The energies of the natural and cultural environment; current remote sensing systems and case histories of applications in measuring the environment. Mintzer.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 505 or Geod Sci 505, or equiv with written permission of instructor. Not open to students with credit for Geod Sci 603. Cross-listed in Geodetic Science.

604 Terrain Analysis U G 4

Principles and applications of photo pattern analysis, geologic and geomorphologic patterns, terrain studies, and land use suitability and capability mapping.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 505 or Geod Sci 505 and Geol&Min 101. Not open to students with credit for 701 or Geod Sci 604 or 625. Cross-listed in Dept of Geodetic Science.

605 Photo-Interpretation for Terrain Analysis U G 5

The use of photo-interpretation techniques in defining the natural and cultural characteristics of the terrain for site planning.

Wi Qtr. 3 cl, 2 3-hr labs, one day field trip. Prereq: Geol&Min 101, 3rd yr standing.

610 Analysis of Natural and Polluted Waters U G 4

A laboratory study of the measurement and interpretation of water quality indices and pollution, parameters including BOD, COD, alkalinity, nutrients, pH, and heavy metals. Rubin.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 518 and Chem 205, or grad standing.

613 Applied Hydrology U G 4

Hydrologic cycle, meteorology, streamflow, evapotranspiration, hydrographs, runoff relations, runoff hydrographs, groundwater, unit hydrographs, flood routing, frequency and duration studies, and application of hydrologic techniques. Ricca.

Au Qtr. 4 cl. Prereq: 510 or 519 or equiv.

614 Transport Phenomena in Water Resources Engineering U G 4

Momentum mass and energy transfer; dimensional analysis; laminar and turbulent transport and mixing; techniques applied to water environment; contaminated transport and hydrodynamics, stratification, and outfall mixing. Bedford.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 406 and 516.

618 Design of Treatment Facilities U G 4

Selection and design of processes for the purification of drinking water and the treatment of wastewaters.

Sp Qtr. 4 cl. Prereq: 518, 521 and 610.

624 Coastal and Ocean Engineering U G 4

Elementary linear and non-linear wave theory; wave forecasting spectra; forces on fixed submerged structures; beach processes, littoral drift and sediment transport; shore line protection; coastal outfalls and intakes. Bedford.

Wi Qtr. 4 cl. Prereq: 519 or equiv with written permission of instructor.

651 Soil Mechanics U G 4

Stress distribution; shear phenomena, lateral earth pressure, settlement, and soil stability. Moore.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 554.

653 Principles of Rock Mechanics U G 4

Fundamental rock properties and their measurement; analysis of rock masses; design and stabilization of underground openings and slopes. Wu.

Wi Qtr. 4 cl. Prereq: 554.

670 Urban Public Transportation U G 4

Planning, analysis, and operation of urban public transportation systems; description and analysis of novel systems. Nemeth.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 576 or equiv with written permission of instructor.

672 Traffic Engineering Studies U G 3

Methods of collecting and analyzing traffic engineering data, including flow characteristics, parking, driver and pedestrian behavior, instrumentation. Mitric.

Au Qtr. 2 cl, 1 3-hr lab. Prereq: 576 or equiv with written permission of instructor.

673 Highway Location and Design U G 4

Methods of highway route location; rural highways, and intersection design standards; horizontal and vertical alignment; cross-section elements; at grade intersections; grade separations and interchanges. Treiterer.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 576.

674 Airport Design and Operation U G 4

Airport configuration, design, and capacity; development of the terminal area; operational aspect of air traffic and the terminal area; design and operation of heliports. Treiterer.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 576.

677 Noise, Pollution and Safety Aspects of Transportation Systems U G 4

Vehicle noise and emissions as affected by operating characteristics; noise measurement and abatement techniques; air quality legislation, air pollution; traffic accident analysis. Treiterer.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 576 or equiv with written permission of instructor.

678 Inter-City Transportation U G 3

Technological and service attributes of inter-city transportation modes; operation of terminals and inter-modal systems; case studies of multimodal corridor planning. Mitric.

Wi Qtr. 3 cl. Prereq: 576.

683 Construction Methods and Equipment U G 3

Selection and management of construction equipment in building of highways, dams, airports, bridges, and structures. Mason.

Au Qtr. 2 cl, 1 3-hr lab. Prereq: 576.

684 Management of Engineering Construction U G 4

Planning, scheduling, and supervision of engineering construction projects; use of Critical Path Method, bar charts, and other techniques. Mason.

Sp Qtr. 2 cl, 2 2-hr lab. Prereq: 683 and 685.

685 Deterministic Construction Estimating and Pricing U G 4

Generally accepted models and methods of estimating and pricing; identification of causes of underestimating and underpricing. Lawer.

Au Qtr. 2 cl, 2 2-hr lab. Prereq or concur: 683.

686 Construction Contracts U G 3

Formulation of contracts, offer and acceptance, breach, damages; analysis of the engineer's responsibilities and liabilities determined by the contract documents of a construction contract. Mason.

Wi Qtr. 3 cl. Prereq: 683 or permission of instructor.

687 Construction Project Administration U G 4

Identification of administrative duties; collecting, storing and retrieving information; document preparation; presentation of proposed administrative procedures which may minimize completion delays and cost over-runs.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 685, 686.

693 Individual Studies U G 3-5

Individual conferences, assigned readings and reports on minor investigations.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

694 Group Studies in Civil Engineering U G 3-5

The student must register for particular topics from fields of civil engineering listed below; the topics, cr hrs and instructors will be announced in quarter previous to the quarter offered.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of

instructor. Repeatable to a maximum of 15 cr hrs, not more than 10 of which shall be in any one of the following fields.

- a—Structural Engineering
- b—Geotechnical Engineering
- c—Sanitary Engineering
- d—Highway and Transportation Engineering
- e—Geodetic and Photogrammetric Engineering
- f—Construction
- g—Materials
- h—Hydraulics and Hydrology

713 Environmental Engineering Measurements U G 4

The application of advanced physical and chemical measurement and calculation techniques to environmental engineering problems. Rubin.

Wi Qtr. 4 cl. Prereq: 610 or equiv with written permission of instructor.

714 Environmental Pollution Abatement U G 5

Problems, philosophies, principles, and methods of pollution abatement in the total environment; quantitative approaches to waste management in air, water, and land systems.

Wi Qtr. 5 cl. Prereq: Sr or grad majors in engineering or sciences. Not open to students with credit for Agri Eng 714, Chem Eng 714, Civil En 518, Mech Eng 714, or Metal En 714. Cross-listed in Depts of Agricultural Engineering, Chemical Engineering, Mechanical Engineering, and Metallurgical Engineering.

715 Water Resource Systems: Water Quantity U G 4

Planning, design, and operation of reservoirs for single and multiple-purpose use, flood estimation and management alternatives, conjunctive use of ground and surface waters. Whitlatch.

Sp Qtr. 4 cl. Prereq: 516, 540 or permission of instructor.

717 Industrial and Municipal Solid Waste Disposal U G 3

Characterization and sources of solid wastes; solid waste management; collection systems; processing; disposal; and recycle.

Sp Qtr. 3 cl. Prereq: 518.

719 Stream Sanitation U G 4

A study of stream quality standards; effluent standards; and the assimilative capacity of natural water bodies. Sykes.

Au Qtr. 4 cl. Prereq: 618 or equiv with written permission of instructor.

720 Water Resource Systems: Water Quality U G 4

Mathematical modeling of conservative and non-conservative pollutants in aquifers, streams, lakes, estuaries and coastal waters and methods for obtaining least cost correction measures. Whitlatch.

Wi Qtr. 4 cl. Prereq: 719 or permission of instructor.

721 Design of Hydraulic Structures U G 4

Basic engineering economic studies, water laws design concepts, reservoir engineering, river training, spillways and energy dissipators; irrigation structures, and channel transition design. Ricca.

Wi Qtr. 4 cl. Prereq: 519.

722 Open Channel Hydraulics U G 4

Flow classifications, channel properties, energy and momentum principles, critical flow, uniform flow formulas, erodible and nonerodible channel design, and gradually varied flow profile computations. Ricca.

Sp Qtr. 4 cl. Prereq: 519.

724 Dynamic Oceanography U G 4

Physical and chemical properties of pure and sea water; global energy balance, governing equations, ocean statics, circulation features, stratification, chloride and pollutant distribution; tide prediction and measurement. Bedford.

Wi Qtr. 4 cl. Prereq or concur: 614.

731 Intermediate Reinforced Concrete Design U G 4

Analysis and design of reinforced concrete systems. Bishara and Chen.

Wi Qtr. 4 cl. Prereq: 535 or 632.

732 Timber Engineering U G 4

Basic properties of and design practice for timber when used as a construction material in engineering structures. Smith.

Au Qtr. 4 cl. Prereq: 532 or 534.

735 Matrix Structural Analysis U G 4

Analysis of skeletal structures by force and displacement methods using matrices. Chen and Sandhu.

Wi Qtr. 4 cl. Prereq: 531 or equiv with written permission of instructor.

736 Bridge Engineering U G 4

Principles and methods used in design and construction of bridge structures. Smith.

Wi Qtr. 4 cl. Prereq: 532, 535 or 632.

737 Prestressed and Precast Concrete Structures U G 4

Structural analysis and proportioning of prestressed concrete members and precast structural concrete systems. Bishara.

Sp Qtr. 4 cl. Prereq: 535 or 632.

738 Plastic Analysis and Design U G 5

Structural behavior in the inelastic range; prediction of collapse loads; structural design according to the plastic methods. Ojalvo.

Wi Qtr. 5 cl. Prereq: 531 and 532.

739 Advanced Structural Engineering U G 4

Analysis and design of statically indeterminate beams, frames, trusses, and arches, using classical methods of analysis.

Sp Qtr. 4 cl. Prereq: 531 or equiv, and 532.

751 Principles of Foundation Analysis and Design U G 4

Subsurface exploration; shallow foundations; piles and caissons; embankments and excavations.

Wi Qtr. 4 cl. Prereq: 651.

752 Soil Stabilization and Earthwork Design U G 4

Properties of compacted soils; principle of soil stabilization and earthwork design.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 651.

753 Pavement Design and Materials U G 4

Properties of paving mixtures, cementing binder and mixtures, and principles of pavement design and performance evaluation. Majidzadeh.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 552.

754 Mechanical Properties of Engineering Materials U G 4

Elasticity, plasticity, viscoelasticity, fatigue, and fracture phenomena in civil engineering materials. Jones.

Au Qtr. 4 cl. Prereq: 451.

755 Solid Waste as a Construction Material U G 3

Solid waste material characteristics, production and availability; physical-chemical nature; application in soil stabilization, embankment construction, asphaltic pavements and concrete mixtures. Majidzadeh.

Wi Qtr. 2 cl, 1 3-hr lab. Prereq: 451 and 552 or equiv with written permission of instructor.

760 Planning Civil Engineering Public Investments U G 4

Economic analysis of civil engineering projects; benefit-cost calculations, alternative criteria for project valuation, case examples, and illustrations from civil engineering. Whitlatch.

Au Qtr. 4 cl. Prereq: 576 or equiv with written permission of instructor.

761 Applications of Engineering Analysis U G 3

Solution of boundary value and eigenvalue problems in mechanics by approximate methods; finite difference and finite element methods. Sandhu.

Au Qtr. 3 cl. Prereq: En Graph 200 and Math 512. Not open to students with credit for Eng Mech 761. Cross-listed in Engineering Mechanics.

770 Transportation Policy and Administration U G 3

Policy development for transportation; formulation of transportation system requirements, constraints and performance characteristics; cost allocation practices; case studies from developing countries. Nemeth.

Sp Qtr. 3 cl. Prereq: 673 or equiv with written permission of instructor.

774 Design and Operation of Traffic Facilities U G 5

Design of streets, intersections, parking and terminal facilities; traffic laws and ordinances; traffic control devices including signs, markings, and traffic signals; street and highway lighting. Treiterer.

Wi Qtr. 4 cl, 1 3-hr lab. Prereq: 672.

775 Urban Transportation Planning U G 4

Discussion and examples of urban transportation planning processes, emphasizing models of locational and travel behavior, development and evaluation of alternatives, and citizen reaction and participation. Godfrey.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 670 or equiv with written permission of instructor, or grad standing in C&R plan. Not open to students with credit for C&R plan 751 or 775. Cross-listed in City & Regional Planning.

782 Analysis and Improvement of Construction Operations U G 3

The analysis and improvement of construction operations. Mason.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: 683.

795 Seminar in Civil Engineering U G 1

Lectures and discussions of current topics related to civil engineering presented by faculty, students, and guest speakers; term paper required.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 3 cr hrs.

a—Structural Engineering
b—Geotechnical Engineering
c—Sanitary Engineering
d—Highway and Transportation Engineering
e—Geodetic and Photogrammetric Engineering
f—Construction
g—Materials
h—Hydraulics and Hydrology

796 Interdepartmental Seminar Urban Transportation U G 1-5

See Interdepartmental Seminars

797 Interdepartmental Seminars U G 1-5

See Interdepartmental Seminars

804 Water Resources Engineering Applications of Remote Sensing G 5

Principles and techniques of using remote sensing for acquisition of data in water resources engineering projects and water quality investigations. Mintzer and Ricca.

Sp Qtr. 3 cl, 2 3-hr lab. Prereq: 719 or 820.

810 Physical Water and Wastewater Treatment Processes G 3

Principles and design of physical processes for water and wastewater treatment including screening, sedimentation, mixing, flotation, and filtration. Stiefel.

Au Qtr. 3 cl. Prereq: 518, prereq or concur 610.

811 Biological Wastewater Treatment Processes G 5

Principles and design of biological processes for wastewater treatment. Sykes.

Wi, Qtr. 4 cl, 1 3-hr lab. Prereq: 810 or equiv with written permission of instructor.

812 Chemical and Advanced Wastewater Treatment Processes G 5

Principles of physical-chemical treatment processes for water and wastewater, including coagulation, softening, absorption, nutrient removal and disinfection. Rubin.

Sp Qtr. 4 cl, 1 3-hr lab. Prereq: 811 or permission of instructor.

814 Industrial Wastewater Treatment G 3

Principles of industrial wastewater treatment including wastewater surveys; flow reduction, and segregation and equalization; batch and continuous treatment; instrumentation; and treatment processes. Stiefel.

Sp Qtr. 3 cl. Prereq: 811; prereq or concur 812.

820 Advanced Hydrology G 5

Advanced analysis of classical concepts; study of new techniques and concepts developing in modern hydrology; written and oral presentations of critical reviews of current literature. Ricca.

Wi Qtr. 5 cr. Prereq: 613 or equiv.

831 Advanced Reinforced Concrete G 5

Concrete structural analysis and design; special structural systems and elements. Bishara.

Au Qtr. 5 cl. Prereq: 731 and 737.

833 Concrete Shell Structures G 5

Analysis of design of folded plate, barrel, and other prismatic structures; domes, hyperbolic and elliptical paraboloids. Ojalvo.

Sp Qtr. 5 cl. Prereq: 531, 535 or 632, and Math 512.

834 Structural Analysis and Design for Dynamic Disturbances G 5

Structural dynamics; principles and practice of dynamic design; numerical and graphical methods. Chen.

Sp Qtr. 5 cl. Prereq: 532, 731, and Eng Mech 410; or equiv; or permission of instructor.

836†* Advanced Matrix Analysis of Structures G 4

Comprehensive presentation of principles and efficient methods of analysis of complex structures; computer analysis of large systems; analysis of non-linear structures; finite element method. Sandhu.

Sp Qtr. 4 cl. Prereq: 735.

837 Advanced Structural Dynamics G 4

Stresses and deflections in structures under dynamic loads; response of large structural systems to earthquake, wind, moving loads; approximate and exact solution techniques. Sandhu.

Au Qtr. 4 cl. Prereq: 834 or Eng Mech 731.

838†* Two-Dimensional Problems in Linear Solids G 4

Formulation of two-dimensional boundary value and initial boundary value problems for linear solids; geometric nonlinearities; refined theories; variational principles; approximate and exact solution techniques. Sandhu.

Wi Qtr. 4 cl. Prereq: 856; and Eng Mech 740 and 754.

839* Finite Element Method in Engineering Science G 5

Theory, computational techniques and application of the finite element method to approximate solution of boundary value and initial-value problems in soil and structural mechanics. Sandhu.

Sp Qtr. 5 cl. Prereq: 735, Eng Mech 740, and Math 601; or equiv.

850 Seepage in Permeable Materials G 4

Analysis of seepage volume and stresses in connection with excavation, dams, wells, slopes, and subsurface drainage; electro-osmosis.

Au Qtr. 4 cl. Prereq: 651.

851 Advanced Soil Properties G 5

Detailed study and analysis of the mechanical properties of soils, with applications to foundation behavior. Moore.

Wi Qtr. 3 cl, 6 lab hrs. Prereq: 651.

852 Advanced Civil Engineering Materials G 4

Analysis and design of materials for pavements and other civil engineering projects; properties considered include fracture, fatigue, and physical-chemical composition. Majidzadeh.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 753 and 754.

853 Advanced Soil Mechanics G 4

Plastic equilibrium of soil masses; stability of slopes and embankments; bearing capacity of shallow and deep foundations.

Sp Qtr. 4 cl. Prereq: 851.

854* Theoretical Soil Mechanics G 3

Use of mathematical and numerical methods in solution of soil mechanics problems; stress and displacements in soil masses and slopes, earthquake stresses, consolidation and frost penetration. Gray, Sandhu, and Wu.

Wi Qtr. 3 cl. Prereq: 850 and 851.

855†* Soil-Structure Interaction G 4

Interactions between soil and various structures, walls, bulkheads, foundations, and piles.

Sp Qtr. 4 cl. Prereq: 851.

856 Viscoelasticity G 4

Viscoelastic materials and their characteristics, discrete element models, spectral representation, creep and relaxation functions, and dynamics of viscoelastic behavior. Majidzadeh.

Sp Qtr. 4 cl. Prereq: 754 and Math 512.

858* Soil Dynamics G 3

Stress waves in soils and vibration in soil masses; soil behavior under impact and repeated loading; design problems including vibrating foundations, blast pressures, and seismic stability. Wu.

Au Qtr. 3 cl. Prereq: 851 and Eng Mech 731, or permission of instructor.

872 Area Traffic Control G 5

Design and performance criteria for area traffic control; design of traffic surveillance and monitoring systems; corridor and network control strategies; on-line computer control algorithms. Treiterer.

Sp Qtr. 4 cl, 1 3-hr lab. Prereq: 774 or equiv.

873 Urban Transportation Demand Forecasting G 5

Travel surveys and data needs; applications of statistical methods to develop models of ownership, trip generation, vehicle occupancy and modal choice; disaggregate models. Godfrey.

Wi Qtr. 4 cl, 1 3-hr lab. Prereq: 775 and Stat 525 or equiv with written permission of instructor.

874 Urban Transportation Network Analysis G 5

Network representation methods; minimum-path trees; bushes; traffic assignment algorithms and their performance; trip distribution models; combined approaches; UMTA Transportation Planning System (UTPS); new directions. Godfrey.

Sp Qtr. 4 cl, 1 2-hr lab. Prereq: 775 and Stat 525 or equiv with written permission of instructor. Not open to students with credit for Ind Eng 874. Cross-listed in Industrial Engineering.

876 Comparisons of Transport Technologies G 3

Critical analysis of methods for comparing technological alternatives in urban transportation; development of alternative transportation plans; synthesis of evaluation techniques. Mitric.

Sp Qtr. 3 cl. Prereq: 670 and 775.

882 Stochastic Construction Estimating and Pricing G 4

New models and methods of estimating and pricing; the examination of data from contracting companies; the utility of percentile distributions, skewness and kurtosis demonstrations. Larew.

Sp Qtr. 2 cl, 2 2-hr lab. Prereq: 685, Stat 520 or equiv with written permission of instructor.

885 Advanced Civil Engineering G 3-5

Opportunity for advanced students to pursue advanced study; work undertaken may be elected in

the fields of civil engineering listed below.

Su, Au, Wi, Sp Qtrs. Prereq.: Permission of dept chairman. Repeatable to a maximum of 20 cr hrs, not more than 10 of which shall be in any one of the fields listed below.

- a—Structural Engineering
- b—Geotechnical Engineering
- c—Sanitary Engineering
- d—Highway and Transportation Engineering
- e—Geodetic and Photogrammetric Engineering
- f—Construction
- g—Materials
- h—Hydraulics and Hydrology

Specific advanced study areas currently available include:

- i—Application of Ecological Theory to Sanitary Engineering
- j—Physical-Chemical Principles of Soil Mechanics

894 Group Studies in Civil Engineering G 3-5

Advanced topics in the various fields of civil engineering; the particular topics, the number of credit hours, and the instructor will be announced in the quarter previous to the one in which the course is offered.

Su, Au, Wi, Sp Qtrs. Prereq.: Written permission of instructor. Repeatable to a maximum of 15 cr hrs, not more than 10 of which shall be in any one field of civil engineering.

896 Interdepartmental Seminar in Polar and Alpine Studies G 1-3

See Interdepartmental Seminars

899 Interdepartmental Seminar G 1-5

See Interdepartmental Seminars

990 Civil Engineering Practicum G 1-5

Supervised field experience in civil engineering; analysis and critique of field experience.

Su, Au, Wi, Sp Qtrs. Prior approval of civil en grad committee required.

999 Research in Civil Engineering G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Classics

Office: 414 University Hall, 230 North Oval Mall, 422-2744

See also Greek, Latin, and Medieval and Renaissance Studies.

120 Aspects of Greek Civilization U 5

Literature, art, architecture, thought, and society in the Periclean Age.

Su, Au Qtrs. Not open to students with credit for H124 or 224.

121 Aspects of Roman Civilization U 5

Literature, art, architecture, thought, and society in the Augustan Age. Amaral.

Su, Wi Qtrs. Not open to students with credit for H125 or 225.

122 Aspects of Classical Mythology U 5

The Greek hero in mythology, with emphasis on one or more of the following cycles of saga: Jason and the Argonauts, Theseus, Heracles, Perseus, Bellerophon.

Sp Qtr. H122 (honors) may be available to students enrolled in an honors program or by permission of dept. *Here in class mythology emphasis on plays by Hesiodus, Sophocles, Euripides*

H124 The Greeks U 5

Discussion of the Greek achievement in literature, history, art, and archaeology. Vaughn.

Au Qtr. 2-2-hr cl. Prereq: Open only to Freshman Scholars and freshmen enrolled in an honors program; permission of dept.

H125 The Romans U 5

Discussion on the Roman achievement in politics, literature, architecture, law, and education. Babcock.

Wi Qtr. 2-2-hr cl. Prereq: Open only to Freshman Scholars and freshmen enrolled in an honors program; permission of dept.

210 Classical Background of Scientific Terminology U 3

Study of technical and scientific terms from Greek and Latin sources; roots, word elements, word formation, analysis; helpful in medical, biological, and kindred studies. Tebben.

Au, Wi, Sp Qtrs.

220 Greek Literature in Translation U 5

Wi Qtr. 5 cl.

221 Latin Literature in Translation U 5

Schlam.

Sp Qtr. 5 cl.

222 Classical Mythology U 5

Origins and attributes of the Greek and Roman gods and goddesses, their mythology and its influence on Western culture.

Au, Wi, Sp Qtrs. 5 cl.

224 Classical Civilization: Greece U 5

A survey of ancient Greek civilization, concentrating upon important facets of literature, history, art, and archaeology. Tracy.

Au Qtr. 5 cl.

225 Classical Civilization: Rome U 5

A survey of the civilization of ancient Rome, concentrating upon important facets of literature, history, art, and archaeology. Davis and Morford.

Su, Wi Qtrs. 5 cl.

294 Group Studies U 1-5

Topics in classics and modern Greek studies.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

501 Studies in Ancient Tragedy U G 5

Studies in the form, content, and subsequent literary influence of Greek and Latin tragedy, based on readings of English translations. Schlam.

Au Qtr. 3 cl. Prereq: One of the following: 120, 121, 122, H124, H125, 220, 221, 222, 224, 225; Comp Lit 101, 102, 103; English 220, 262; History 601, 602, 603; Theatre 100, 271.

502 Comic Spirit in Antiquity U G 5

Studies in the comic literature of the Greco-Roman world, to be drawn from epic, drama, satire, and the novel. Lacey.

Sp Qtr. 3 cl. Prereq: One of the following: 120, 121, 122, H124, H125, 220, 221, 222, 224, 225; Comp Lit 101,

102, 103; English 220, 262; History 601, 602, 603; Theatre 100, 271.

503† Studies in Greek and Roman Epic U G 5

Studies in the form, content, and subsequent literary influence of Greek and Latin epic, based on readings of English translations. Amaral.

Au Qtr. 3 cl. Prereq: One of the following: 120, 121, 122, H124, H125, 220, 221, 222, 224, 225; Comp Lit 101, 102, 103; English 220, 262; History 601, 602, 603; Theatre 165.

504 Religious Thought and Institutions in the Greco-Roman World U G 5

Selected topics from the history of Greek and Roman religion, based on readings in ancient and secondary sources. Hahm.

Au Qtr. 3 cl. Prereq: One of the following: 120, 121, 122, H124, H125, 220, 221, 222, 224, 225; Anthropol 515; History 601, 602, 603; Philos 210, 270, 511.

505† Political Thought and Institutions in the Greco-Roman World U G 5

Selected topics concerning the development of ancient political theory.

Wi Qtr. 3 cl. Prereq: One of the following: 120, 121, 122, H124, H125, 220, 221, 222, 224, 225; Anthropol 515; History 601, 602, 603; Philos 210, 270, 511.

506† Greek and Roman Science and Technology U G 5

The origins and achievements of Greek and Roman science and technology. Hahm.

Sp Qtr. 3 cl. Prereq: One of the following: 120, 121, 122, H124, H125, 220, 221, 222, 224, 225; Anthropol 515; History 601, 602, 603; Philos 210, 270, 511.

507† Roman Law Through the Reign of Justinian U G 5

Studies in the origins and development of Roman Law based on original sources in translation. Vaughn.

Sp Qtr. Prereq: One of the following: 121, H125, 225; History 603.01, 603.02, 603.03, 607.01; or equiv with written permission of instructor.

694 Group Studies U G 1-5

Investigation of particular problems in various areas of classical studies.

Au Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

698† Study Tour U 15

Five weeks of intensive instruction in the civilizations of ancient Greece or ancient Rome, followed by five weeks travel in Greece and Crete or in Italy, including visits to the major museums and archaeological sites and daily formal instruction. Tracey.

Sp Qtr. Prereq: Permission of instructor.

699 Senior Tutorial and Essay U 5

Individual work leading to the writing of a final paper that will integrate the experience of earlier courses in classics.

Au, Wi, Sp Qtrs. Open only to srs majoring in classics.

H783 Honors Course U G 3-5

A program of study arranged for each student, with individual conferences, reports and an honors thesis.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing with a grade of A in at least half of the classics courses taken and with an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Failure to receive a mark of S in this course is a disqualification for special honors.

Major cycles of classical saga & folklore & the legends of classical civilization

Hs 223 Classical Legend, Saga, & Folklore

800 Materials and Methods of Research G 2

The materials, problems and methods of classical research.

Wi Qtr. 1 2-hr cl. Required of all grad students.

801 Materials and Methods of College Teaching of Classics G 2

Methods and techniques for teaching Latin, Greek and courses in classical subjects at the college level. Lacey.

Au Qtr. 1 2-hr cl. Repeatable to a maximum of 4 cr hrs.

Communication

Office: 205 Derby Hall, 154 North Oval Mall, 422-3400

035 American Speech for International Students U 5

Assignment to both English and the appropriate speech communication course is made on the basis of examinations given at the beginning of each quarter to all new students whose native language is not English. Goff.

Au Qtr. 5 cl. 5 cr hrs will be added to graduation requirements. Often taken in conjunction with English 071.

040 Personal Speech and Hearing Rehabilitation U 0 or 3

Personal speech and hearing rehabilitation for individuals with articulation, voice, or stuttering problems of speech or with impaired hearing.

Au, Wi, Sp Qtrs. 5 cl. Credit shall not count toward graduation. For students with speech or hearing disorders. Repeatable.

105 The Communication of Ideas and Attitudes U 5

The analysis, formulation, organization, development, and delivery of ideas and attitudes within contemporary issues by means of audience analysis and dialogue. Makay.

Au, Wi, Sp Qtrs. 5 cl.

110 Small Group Communication U 5

Designed to help the student develop the skills necessary for effective communication in the small group by providing task related group activities. Wall.

Au, Wi, Sp Qtrs. 5 cl.

115 Broadcasting in America U 3

The process of mass communication; the effects of mass media on society, and the structures society imposes on the media. Wartella.

Au, Wi, Sp Qtrs. 3 cl.

125† Parliamentary Law U 3

Study of the rules of procedure by which self-governing organizations transact business.

3 cl.

135 Voice and Diction U 3

Introductory study of the principles of a satisfactory speaking voice; designed for students concerned about the adequacy of their speech. Goff.

Au, Wi, Sp Qtrs. 3 cl.

201† Introduction to Speech Communication U 5

Designed for students who wish to have a broad overview and understanding of the field of speech communication.

5 cl.

205 Communication Co-Curricular Activities U 1-5

Participation in specialized activities.

Au, Wi, Sp Qtrs. Each category repeatable to a maximum of 6 cr hrs. Prereq: Written permission of instructor.

a—Performance Activities

b—Research Projects

c—Career Development

d—Production Activities

209 Communication Theories and Models U 3

Communication model characteristics; structure and function, general principles; basic processes and major types of activities; receivers and effects; motivations, value systems, and norms. Wall and Elliott.

Au, Wi, Sp Qtrs. 3 cl.

210 Introduction to Telecommunication Production U 3

Assets and liabilities of the telecommunications media; basic principles, procedures, techniques, and costs involved in telecommunications production.

Au, Wi, Sp Qtrs. 3 cl. Not open to students with credit for 229.

213 Rhetoric in Western Thought U 5

Rhetorical theories as they reflected and affected society from Greece to modern times; relations to logic, ethics and poetics; the classical tradition versus sophistical concepts. Berquist and Golden.

Au, Wi, Sp Qtrs. 5 cl.

215 Elements of Telecommunication U 3

Introduction to the evolution and operation of the telecommunication media; the structures of media programming; basic processes of the media.

Au, Sp Qtrs. 3 cl. Prereq: Communication majors or permission of instructor.

217 Rhetoric of American Issues U 5

A study of selected American spokespersons, the issues in their messages, and the audience reactions in response to this discourse from 1800 to the present.

Au, Sp Qtrs. 5 cl.

221 Fundamentals of Oral Interpretation U 5

Introductory course to develop understanding and appreciation of literature through the oral re-creation of literary materials and critical listening. Brooks.

Au, Wi, Sp Qtrs. 5 cl.

225 Persuasive Communication U 5

Analysis of persuasive communication as a form of influence; the process and functions involved, its potential and limitation for individuals and organizations. Cegala.

Au, Wi, Sp Qtrs. 5 cl.

230 Introduction to Speech and Hearing Science U 3

Survey of the topics, methodologies, and applications of speech and hearing science in normal and aberrant communication; lectures and readings. Hardick.

Au, Wi, Sp Qtrs. 3 cl.

235 Speech Functions and Responsibilities of the Teacher U 3

A study of speech and hearing deviations commonly found in the classroom and of the role of the teacher. Goff and Brittin.

Au, Wi, Sp Qtrs. 3 cl.

240 Bases of Oral Communication U 3

A study of the theories of the production and perception of speech. J. Lynn.

Au, Wi, Sp Qtrs. 3 cl.

245 Principles of Phonetics U 3

The available descriptions of the sounds of speech and a comparative study of the systems of representing the sounds. J. Lynn.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 240 recommended. Not open to students with credit for 545.

250 The Development of Speech and Language in Children U 3

The growth of speech and language in children; theories of speech and language development; causes of speech and language aberrations. Goff.

Au, Wi, Sp Qtrs. 3 cl.

305 Argumentation and Debate U 5

Principles of reasoned discourse and their application to controversial issues. Berquist and Brown.

Au, Wi, Sp Qtrs. 5 cl.

315 Interpersonal Communication U 3

Analysis of dimensions and relationships in interpersonal communication, especially needs, perceptions, orientations, contexts, and barriers; exercises, demonstrations, and applications to students' own experiences. Douglas.

Au, Wi, Sp Qtrs. 3 cl.

325 Communications and Society U 3

Communications and the role of government, pressure groups, and other segments of society; the impact of communications on individual and collective behavior.

Au, Wi, Sp Qtrs. 3 cl.

330 Rhetoric of Black Americans U 3

Examination of the rhetoric of black Americans in connection with such strategies as assimilation, separation, and revolution, to establish a role or identity in American society. Hale and Smallwood.

Wi Qtr. 3 cl.

410 Program Processes in Radio U 4

The program functions in radio communication including the planning, production, and direction of programs.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 210.

420† Symbol Systems and Communication Behavior U 3

Study of the nature and forms of symbolic behavior; the human uses of symbols, particularly in communication.

3 cl.

440 Anatomy and Physiology of the Ear and Vocal Mechanisms U 5

A study of the organs and systems of the body related to the processes of speech and hearing. Ferraro.

Au, Wi Qtrs. 5 cl. Prereq: 240.

505 Presentational Speaking in the Modern Organization U G 5

The theory and practice of planning, preparing, and

transmitting formal position statements in settings of organizational decision-making. Makay.

Au, Wi, Sp Qtrs. 5 cl.

510 Program Processes in Television U G 5

Creating, planning, producing, and directing of the television program; development of program forms, program sources, programming organization, and program evaluation.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 210.

515† Organizational Communication U G 5

A study of the communicator and communication systems in organizations with emphasis on theory, relationships, and objectives. Hawes and Brooks.

5 cl.

525† Broadcasting and Written Messages U G 4

Analysis of program types in relation to writing effectiveness; communication significance of content and style elements in television and radio. Monaghan.

3 cl.

530 Communication and the Task-Oriented Group U G 5

Information gathering, processing, and communicating phases of small group communication with emphasis on recent, socially significant task forces and on group reports generated in class. Wall.

Wi Qtr. 5 cl. Prereq: 110 or equiv.

540 Introduction to Audiology U G 5

A study of hearing, both normal and abnormal, with information on the nature, causes, identification, and rehabilitative treatment of persons with hearing disorders. Ferraro.

Au, Sp Qtrs. 5 cl. Prereq: 240 and 440.

550 Introduction to Speech Pathology U G 3

A study of disorders of speech; information on prevalence, causes, types, and effects. Brittin and Goff.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 240, 245, and 250.

555 International Broadcasting U G 3

Dimensions of national and international broadcasting; satellite communication, types of programming; problems of effective transmission and reception of foreign broadcasts—organizational, cultural, political, and economic. Monaghan.

Sp Qtr. 3 cl.

Teaching of Speech in Secondary Schools

See Ed-Hums 556.

611 Advanced Oral Interpretation U G 3

A study of programming non-dramatic literature for communication by groups; novel, short story, and verse stressed; laboratory experiences in Readers Theatre and Chamber Theatre. Brooks.

Wi, Sp Qtrs. 3 cl. Prereq: 221 or grad standing.

616 Communication in Decision-Making U G 5

Decision-making as a process; comparisons between interpersonal, bargaining-negotiation contexts, and groups and organizations; descriptive and prescriptive models of decision-making in small groups and organizations. Hawes and Brooks.

Wi Qtr. 5 cl.

618 Principles of Interviewing U G 5

Dyadic communication as it occurs in the interview with special attention devoted to the student's ability to engage in informational, persuasive, and employment interviews. Hawes.

Au, Wi Qtrs. 5 cl.

620 Communication Systems and Social Process U G 3

Communication processes underlying social and cultural pressures on the individual; communication analysis of behavior; techniques of inquiry into forms of symbolic influence. Douglas.

Wi, Sp Qtrs. 3 cl. Prereq: 40 qtr hrs in social sciences and permission of instructor. Not open to students with credit for 520.

621 Theories of Rhetoric U G 5

Reading and detailed study of the theories of principal rhetoricians from ancient to modern times. Golden.

Au Qtr. 5 cl.

623† Rhetorical Dialogue U G 5

Theoretical and critical study of the emerging concept of dialogue in contemporary rhetoric, including the scope of rhetoric, public discourse and dialogic vs. monologic communication. Makay.

4 cl.

626 Broadcast Audience Analysis U G 5

Introduction to various inquiry methods which may be used for understanding and developing communication processes involving the media producer and the intended audiences. McCain and Monaghan.

Wi Qtr. 4 cl.

630† Creative Processes in Telecommunication U G 3

Aesthetic and creative processes in program creation and evaluation; analysis of the influences of style, content, and treatment. Foley.

3 cl.

Teaching Dramatics and Oral Interpretation in Secondary Schools

See Ed-Hums 631.

632 Aural Rehabilitation U G 3

A study of auditory training, speech reading, and the speech and language deficits of the hearing impaired. G. Lynn.

Au, Wi Qtrs. 3 cl. Prereq: 250 and 540.

633 Psychology of the Audience U G 2

Descriptive and experimental studies of audience behavior; dimensions and patterns of audience stimulation; measurements of affects of communication, communication analysis; listening.

Wi Qtr. Prereq: 10 cr hrs in communication or permission of instructor.

635 Introductory Instrumentation for Speech and Hearing Science U G 3

Fundamental concepts of electronics with application to instrumentation for speech and hearing. Ferraro.

Wi Qtr. 3 hr cl. Prereq: 240.

636 Principles of Audiometry U G 5

A study of the techniques of hearing assessment in clinical, educational, industrial, and medical settings. J. Lynn.

Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 540; prereq or concur 635.

640 Speech Pathology: Disorders Associated with Physical Anomalies U G 5

Consideration of theories, principles, and procedures for appraisal and treatment of deviant voice and articulation that accompanies cleft palate, cerebral palsy, maxillofacial injuries, and other physical disabilities.

Wi Qtr. 5 cl. Prereq: 440 and 550.

644 Theories of Language Development of the Deaf U G 3

Study of the communicative processes of acoustically handicapped individuals; symbolization, meaning, syntax.

Wi Qtr. 3 cl. Prereq: 250 and Ed Excep 651.

648† The Pre-School Deaf Child U G 3

Study of the problems of communication of the deaf child.

Su Qtr. 3 cl. Prereq: 250 and Ed Excep 659 and 660.

650 Acquisition of Communicative Behavior U G 3

Theoretical and empirical aspects of the acquisition and nature of communicative behavior, including meaning and semantics, cultural differences, situational sensitivity, pragmatics, and conversational interaction.

Wi Qtr. 3 cl.

652 Stuttering: Theories and Therapies U G 5

Theories, principles, and procedures for the appraisal and treatment of persons with dysfluencies in speech.

Sp Qtr. 5 cl. Prereq: 550 and 10 cr hrs in psych.

655 Speech Pathology: Appraisal U G 3

Basic principles, procedures, and techniques in interviewing and the evaluation of articulation, voice, language, rhythm; experience in appraisal and writing examination reports.

Wi Qtr. 2 cl, 2 lab hrs. Prereq: 550 and 9 cr hrs in psych. Not open to students with credit for 656.

660 Speech Pathology: Articulation and Voice U G 5

Principles and procedures and techniques for the treatment of speech disorders with emphasis on vocal and articulatory deviations not associated with physical disabilities.

Wi Qtr. 5 cl. Prereq: 135 and 550. Not open to students with credit for 656.

Advanced Methods in School Speech and Hearing Therapy

See Ed-Excep 663.

670 Analysis of Language and Communication U G 3

Descriptive and experimental studies of speech and language processes; learning, vocal and visible symbolism, language and thought, information processing; communication behavior patterns. Elliott.

Sp Qtr. Prereq: 10 cr hrs in psych and 10 cr hrs in communic.

680† Ethics of Communication U G 3

Lectures, discussions, assimilations, and case studies will focus on the nature, roles, and functions of ethics in communication in response to major topics and questions. Makay.

3 cl.

693 Individual Studies U G 1-5

Conference, library, and laboratory work.
Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.
Repeatable to a maximum of 15 cr hrs.

698† International Study Tour U G 6-15

Intensive five-week study on campus followed by six-week study abroad; topics to be announced.
Sp Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

701 Research Methodologies in Speech Communication U G 4

Predominant research methodologies in the field of speech communication.

701.01 Statistical Concepts and Logic

Au, Wi Qtrs. Prereq: Permission of instructor.

701.02 Measurement of Communication Variables

Cegala.

Sp Qtr. Prereq: 701.01

701.03 Experimental Design

Foley.

Sp Qtr. Prereq: Permission of instructor.

701.04 Humanistic Communication Analysis

Monaghan.

Prereq: Permission of instructor.

701.05 Content and Interaction Analysis.

Elliott.

Prereq: 701.01 or equiv.

701.06 Computer Applications

Foley.

Prereq: Permission of instructor.

701.07 Field Study and Participant Observation

Hawes.

Prereq: Permission of instructor.

701.08 Historical Analysis

Berquist.

Prereq: Permission of instructor.

701.09 Rhetorical Analysis and Criticism

Makay.

Prereq: Permission of instructor.

701.10* Legal Research

Prereq: Permission of instructor.

703† Attitude Theories and Communication U G 3

Consistency, stimulus-response, functional, social judgment, and dissonance theories of attitude are examined in relation to communication theory, research, and measurement. Wall.
3 cl.

704 Practicum in Organizational Communication U G 5

Class discussion and first-hand observation of communication systems in organizations with emphasis on student exposure to the daily routine activities of selected organizations. Hawes and Brooks.

Su, Au, Wi, Sp Qtrs. 12-hr cl, 13-hr lab. Prereq: 515 or equiv and permission of instructor. Repeatable to a maximum of 10 cr hrs.

705† Social Realities in Rhetoric U G 3

Survey of trends in rhetorical criticism since 1925 with reference to figure studies, Burkeian criticism and movement studies. Brown.
3 cl.

710† Analysis of Communication Systems in Organizations U G 3

An investigation of human communication systems in organizations with attention given to systems theory, information flow, communication climate, human resources and communication media. Hawes.

Prereq: 515 or grad standing.

715 Broadcasting and the Public Interest U G 3

Communication significance of "public interest" concept in broadcasting; effect on program standards, self-regulation, government regulation.

Au, Wi Qtrs. 3 cl.

735 Hearing Aids U G 2

Electroacoustic characteristics of hearing aids; hearing aid selection and orientation. Hardick.

Sp Qtr. 2 cl. Prereq: 632 and 636.

745 Theories of Speech Development of the Deaf U G 3

Study of the development of speech under conditions of minimum auditory stimulation and acoustic feed-back.

Sp Qtr. 3 cl. Prereq: 240, 545, and 644.

752 American Dialects U G 3

Comparative phonetics and lexical usages with an emphasis on social dialects in American speech.

Au Qtr. 3 cl. Prereq: 545.

755 Clinical Exposure in Speech and Hearing U G 2

Observation and practice in appraisal and treatment of speech and hearing disorders.

Au, Wi, Sp Qtrs. 2 cl, 7 1-hr labs. Repeatable to a maximum of 6 cr hrs.

a—Speech Pathology: speech and language disorders. Prereq: 550.

b—Audiology: hearing testing and aural rehabilitation. Prereq: 540.

H783 Honors Course U 3-15

A program of independent study for the student with special aptitudes; individual conferences and reports. Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the communic courses and an average of B in the remainder; permission of the instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Repeatable to a maximum of 15 cr hrs.

794 Group Studies U G 3

Su, Au, Wi Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

797 Interdepartmental Seminars U P G 3

See Interdepartmental Seminars.

Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

a—Language Disorders in Children. MacDonald.

b—Audiometric Assessment in Mental Retardation. Niswander.

c—Language Therapy in Mental Retardation. MacDonald.

d—Mental Retardation. Niswander.

e—Auditory Rehabilitation.

f—Language Learning Disorders. Brittin.

802 Communication Theories and Models G 3

The formal principles of theory and model construction function as criteria for examining the strengths and weaknesses of four classes of interpersonal communication models. Elliott.
Au Qtr. 1 3-hr cl.

803 Contemporary Persuasion Theory G 3

Study of the viewpoints and theoretical explanations of persuasive effects found among major contemporary authors in the field. Cegala.
Au Qtr. 3 cl.

806 Advanced Studies in Television and Radio G 3

Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

- a—Cross-Cultural Media Organizations
- b—Current Research in Mass Communication
- c—Philosophy of Mass Communication Inquiry

811 Seminars in History and Criticism of Public Address G 3

Prereq: Permission of instructor. Repeatable to a maximum of 40 cr hrs.

- a—Rhetoric of Social Movements
- b—American Culture and Public Address
- c—Rhetoric, Public Communication, and Instruction
- d—Social Judgment and Public Address

816 Seminars in Rhetorical Theory G 3

Prereq: Permission of instructor. Repeatable to a maximum of 25 cr hrs.

- a—Contemporary Rhetoric: The Classical Heritage
- b—Contemporary Rhetoric: Major Modern Theories
- c—Contemporary Rhetoric: Recent American Theorists
- d—Speech Act Theory

821 Seminars in Television and Radio G 3

Prereq: Permission of instructor. Repeatable to a maximum of 40 cr hrs.

- a—Sociology of Media
- b—Perspectives on Mass Communication
- c—Impact of Changing Media Technology
- d—The Mass Media Audience
- e—Public Broadcasting
- f—Information Processing in Mass Communication Research

826 Seminars in Communication Behavior G 3

Prereq: Permission of instructor. Repeatable to a maximum of 40 cr hrs.

- a—Consulting: Theory and Structure
- b—Seminar in Small Group Communication
- c—Structuring Workshops for Industry
- d—Developmental Communication
- e—Phenomenology and Communication
- f—Symbolic Process and Collective Image
- g—A comparison of Perspectives in the Study of Communication

832 Experimental Phonetics G 5

A study of experimental investigations of acoustic, physiological, and psychological aspects of speech and related laboratory experiments.

Sp Qtr. 3 cl, 22-hr labs. Prereq: 545, 856, or permission of instructor.

836† Disorders of Communication Associated with Neuropathologies G 5

Study of the nature, diagnosis, prognosis, and treatment of speech manifestation in dysarthria and aphasia.

5 cl.

844 Advanced Practicum in Speech and Hearing G 1-10

Advanced practicum in speech, hearing, and language.

Au, Wi, Sp Qtrs. 1 cl, 3 clinical hrs per wk for each hr of cr. Prereq: Permission of instructor. Repeatable to a maximum of 45 cr hrs.

848 Interdisciplinary Functioning in Disorders of Oral Communication G 3

The diagnosis and treatment of profound speech and hearing disorders and the joint rehabilitation treatment accorded pathological ear and vocal mechanisms by ancillary disciplines. Grimm.

Wi Qtr. 4 cl. Prereq: 836 and 844, or equiv with written permission of instructor.

856† Speech and Hearing G 3

Theoretical concepts and physiological and psychophysical data relative to hearing with particular reference to the preception of speech. G. Lynn.

3 cl. Prereq: 540 or equiv and Physics 501. Repeatable to a maximum of 6 cr hrs.

894 Group Studies G 3

Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

899 Interdepartmental Seminar G 3

See Interdepartmental Seminars.

Seminars: Speech-Theatre Education

See Ed-Hums 925.09.

940† Advanced Studies in Speech and Hearing Science G 3

Prereq: Permission of instructor. Repeatable to a maximum of 45 cr hrs.

- a—Design of Experiments in Speech and Hearing.
- b—Interpreting Audiometric Results. Nilo.
- c—Instrumentation in Speech and Hearing.
- d—Advanced Audiometry.
- e—Assessment of Aphasia.
- f—Computer Analysis of Speech Signals.
- g—Speech and Hearing in Public School Setting. Brittin.

950† Seminar in Speech and Hearing Science G 3

Prereq: Permission of instructor. Repeatable to a maximum of 45 cr hrs.

- a—Acoustic Spectrography.
- b—Psychoacoustics. Melnick.
- c—Management and Supervision. Goff.
- d—Supervision and Counseling.
- e—Studies in Infant Vocalizations. Goff.
- f—Audiological Trends.
- g—Disorders of Rhythm.
- h—Trends in Aural Rehabilitation.

990 Areas and Techniques of Research in Speech Communication G 3

A review and critical commentary on typical methods of research in each of the principal areas of graduate research in speech; research reports.

Au Qtr. 3 cl. Prereq: 25 cr hrs in communic.

998 Research in Speech Communication: Thesis G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 5 cr hrs.

999 Research in Speech Communication: Dissertation G Arr

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Comparative Studies in the Humanities

Office: 306 Dulles Hall, 230 West 17th Avenue,
422-2559

101 Man Views Himself through Literature: Social and Individual Man U 5

Literary examples of the conflict between man's existence as social being and the urge to maintain authenticity of his inner life; Iliad to Kafka.

Au, Wi, Sp Qtrs. 1st or 2nd yr standing only. H101 (honors) may be available to students enrolled in an honors program. 101, 102, and 103 may be taken independently.

102 Man Views Himself through Literature: Religious and Secular Man U 5

Man's attempt to cope with ultimate problems of existence lead to variety of responses; Divine Order (Dante) to universe without any discernible order (Beckett).

Au, Wi, Sp Qtrs. 1st or 2nd yr standing only. H102 (honors) may be available to students enrolled in an honors program. 101, 102, and 103 may be taken independently.

103 Man Views Himself through Literature: Rational and Passionate Man U 5

Development of rational and passionate in human nature; Lucretius to Heller show man's attempt to reconcile, ignore, or suppress one at expense of the other.

Au, Wi, Sp Qtrs. 1st or 2nd yr standing only. H103 (honors) may be available to students enrolled in an honors program. 101, 102, and 103 may be taken independently.

201 Absurdist Drama and Theory U 5

Study of absurdist authors; several critical-theoretical works about contemporary comedy and the study of comic antecedents.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 3 cr hrs in literature.

202 The Picaresque Tradition U 5

The picaresque and picaresque tradition in European and American literature from origins in the 16th century to counterpart in present.

5 cl. Prereq: 3 cr hrs in literature.

203† Shorter Prose Forms U 5

Systematic study of the essay: its development as a genre; various forms and styles; broad selection for comparative purposes of famous essays.

5 cl. Prereq: 3 cr hrs in literature.

204† The War Novel: The Individual Soldier and the Enemy U 5

Representative European novels concerning personal wartime experiences; an attempt to understand impact of major 20th century wars on modern thought.

5 cl. Prereq: 5 cr hrs in literature.

206† Gods, Heroes, and Anti-Heroes in Black and White Drama U 5

A thematic approach to selected plays by black and white dramatists.

5 cl. Prereq: 5 cr hrs in literature.

210† Odyssey Literature: The Theme of the Wanderer in Search of Home U 5

The motif of journey and home in Western literature. 5 cl. Prereq: 5 cr hrs in literature.

211 Existentialist and Freudian Themes in 20th Century Literature U 5

The quest for self-definition in the twentieth century using the contrasting theories of Freud and Sartre as points of departure.

5 cl.

213 The Self Defined: Freedom and Control U 5

The conflicts between freedom and social control as reflected in the works of modern writers.

5 cl.

228 Women Writers: Traditional Roles U 5

Nineteenth and twentieth century women writers defining their attitudes toward the traditional roles associated with education, marriage, and motherhood.

Au, Wi, Sp Qtrs. 4 or 5 cl. Prereq: 5 cr hrs in literature.

229 Women Writers: Conflict and the New Militancy U 5

Nineteenth and twentieth century women writers rejecting traditional feminine roles and proposing alternatives. Mayne.

Au, Wi, Sp Qtrs. 4 or 5 cl. Prereq: 5 cr hrs in literature.

294 Group Studies U 1-5

Designed to give groups of students an opportunity to pursue special studies not otherwise offered.

Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

301† Concepts of Love in European Literature U 5

Study of various concepts of love as they appear in and influence European literature from ancient authors to Shaw.

5 cl. Prereq: 5 cr hrs in literature and jr standing.

303 Confessional Literature of Continental Europe: The Self Revealed U 5

Study of the individual as revealed in personal literature; memoirs, confessions, autobiographies, and novels containing substantial portions of autobiographical material.

5 cl. Prereq: 5 cr hrs in literature and jr standing.

501 Myth and Ritual in Dramatic Literature U 5

Investigation of ways dramatic art is built on mythical and ritual patterns; exploration of the common concerns of ritual, myth, dramatic structure.

5 cl. Prereq: 10 cr hrs in literature and jr standing.

502 Archetypal Patterns in the Novel U 5

Theories applicable to archetypes and primitive ritual in the novel.

5 cl. Prereq: 10 cr hrs in literature and jr standing.

503 Satire: The Artist's Critique of His World U 5

Evolution of the satiric mode; forms, aims, moral implications; stylistic and aesthetic qualities of each individual work will be examined.

5 cl. Prereq: 10 cr hrs in literature and jr standing.

510 An Introduction to the Arthurian Cycle U 5

The medieval *matiere de Bretagne* from its origins to Malory's *Morte d'Arthur*.

5 cl. Prereq: 10 cr hrs in literature and completion of the 4th regular University course in French, German, Italian, Latin, Portuguese, or Spanish. Not open to freshmen.

512 European Experiments in the Realistic Drama U 5

Comparative study of early naturalism and realism in European literature; related non-dramatic works will be studied.

5 cl. Prereq: 10 cr hrs in literature and completion of the 4th regular University course in any modern European language.

513 The Faustian Hero U 5

The most significant versions of the Faust story and its characteristic motifs.

4 or 5 cl. Prereq: 10 cr hrs in literature.

693 Individual Studies U 5-10

Designed to give able students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Jr standing and permission of chairman. Not open to freshmen or sophomores. Repeatable to a maximum of 10 cr hrs.

694 Group Studies U 1-5

Special topics.

Prereq: 10 cr hrs in literature. Repeatable to a maximum of 10 cr hrs.

H783 Honors Course U 5-10

Senior Honors course leading to graduation *with distinction*; independent study for the student with special aptitude.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing with a grade of A in at least half of the comp lit courses taken and an average of B in the remainder; permission of the instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Repeatable to a maximum of 10 cr hrs. Failure to receive a mark of S in this course is a disqualification for special honors.

Computer and Information Science

Office: 228 Civil and Aeronautical Engineering Building, 2036 Neil Mall

100 Computers in Society U 3

An introductory course of general interest to all students, treating the actual and potential role of the computer in our society; does not teach or require computer programming.

Au, Wi, Sp Qtrs. 3 cl. Not open to students majoring in cptr/inf.

201 Elemental Digital Computer Programming U 4

Introduction to programming; laboratory experience with computers; emphasis on social science applications. Not recommended for students who plan to continue cptr/inf courses.

Su, Au, Wi, Sp Qtrs. 3 cl, 3 hrs lab. Not open to students with credit for 211, 221, 240, 241, or En Graph 200.

211 Computer Data Processing I U 5

Introduction to electronic computers, computer programming, and sequential data processing concepts; laboratory work emphasizes business-oriented applications.

Su, Au, Wi, Sp Qtrs. 4 cl, 3 hrs lab. Prereq: Math 116, 121, or 150. Not open to students with credit for 201, 221, 240, 241, or En Graph 200.

212 Computer Data Processing II U 4

Business data processing principles and programming; topics include external sorting techniques, characteristics of direct access storage devices, concepts of multiple program systems.

Su, Au, Wi, Sp Qtrs. 3 cl, 3 hrs lab. Prereq: 211, 221, 240, 241, or En Graph 200. Not open to students with credit for 200.

221 Programming and Algorithms I U 4

Algorithms, programs and computers; basic programming and program structure; emphasis on scientific computing.

Su, Au, Wi, Sp Qtrs. 3 cl, 3 hrs lab. Prereq: Math 152. Not open to students with credit for 201, 211, 240, 241, or En Graph 200.

222 Programming and Algorithms II U 4**222.01 Programming and Algorithms II**

Algorithms, programs and computers; basic data structures; survey of computers; emphasis on nonnumerical computing; PL/I is the basic language used.

Su, Au, Wi, Sp Qtrs. 3 cl, 1 lab. Prereq: 221. Not open to students with credit for 222.02 or 241.

222.02 Programming and Algorithms II

Algorithms, programs and computers; basic data structures; survey of computers; emphasis on nonnumerical computing; PL/I is the basic language used.

Au, Wi, Sp Qtrs. 4 cl, 1 lab. Prereq: 201, 211, or En Graph 200. Not open to students with credit for 222.02 or 241.

294 Group Studies U 1-5

Special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

311 Introduction to File Design and Analysis U 4

Principles of secondary storage data organization and maintenance; examination of sequential and direct file structures on tape and direct access devices.

Au, Wi Qtrs. 4 cl. Prereq: 212, 222, or permission of instructor.

411 Design of On-Line Systems U 4

Introduction to environment and processing requirements for on-line systems; emphasis on both hardware and software components, and on evaluation procedures for such systems.

Wi, Sp Qtrs. 4 cl. Prereq: 212, 222, or permission of instructor.

505 Fundamental Concepts of Computer and Information Science U G 5

Introduction to the fundamental concepts of computer and information science with a survey of the principal areas of activity in the discipline.

Au, Wi Qtrs. 5 cl. Prereq: 201, 211, 221, or En Graph 200.

511 Computer Systems and Programming for Administrative Sciences U G 3

Development of programming skills and techniques applicable to problems and practices in administrative sciences for students with no prior computer programming.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Grad status in College of Administrative Science or permission of instructor.

541 Survey of Numerical Methods U G 5

Basic techniques of numerical analysis; finite differences, interpolation, solution of equations, numerical integration and differentiation; engineering and scientific applications; laboratory use of computers.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 201, 211, 221, or En Graph 200; concur Math 255 or 556. Not open to students with credit for 640.

542 Introduction to Computing in the Humanities U G 3

Use of non-numerical programming language for editing and collating texts, for forming indices and concordances, and for studies of style, attribution, and literary influence.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Jr standing.

543 Intermediate Digital Computer Programming U G 5

Introduction to symbolic assembler language, program linkage, input-output instructions, and machine organization; laboratory use of computers.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 212 or 222.

548 Computer Science for High School Teachers U G 5

Introduction to computer history, organization, hardware and software; laboratory experience using batch processing and time-sharing; applications of computers with emphasis on uses in education and business.

Su, Qtr. 5 cl. Prereq: Permission of instructor. Open only to high school teachers. Primarily intended for science, math, or business teachers.

550 Introduction to Information Storage and Retrieval U G 5

Introduction to fundamental concepts of information storage and retrieval; discussion of existing systems and their shortcomings; emphasis on current research and new developments.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 201, 211, 221, or En Graph 200.

555 Survey of Programming Languages U G 5

Survey of programming languages for digital computers, comparison of various procedure-oriented languages; implementation techniques.

Su, Wi, Sp Qtrs. 5 cl. Prereq: 543. Students planning to take 756 may wish to take 755 instead of 555.

610 Principles of Man-Machine Interaction U G 5

Systems concepts, their measurement and modeling; behavioral processes; sensing, learning, memory, complex information processing, and decision making; interface theory and interactive systems.

Wi, Sp Qtrs. 5 cl. Prereq: Grad standing or permission of instructor. Not open to students with credit for Psych 620.

Human Performance**640 Numerical Analysis U G 5**

Mathematical analysis of standard numerical

methods for interpolation, approximation, and quadrature; numerical solution of nonlinear equations and ordinary differential equations.

Au, Sp Qtrs. 5 cl. Prereq: 212, 222, or En Graph 200; Math 255 or 556, and Math 550; or grad standing and permission of instructor.

641 Computer Systems Programming I U G 5

Usage of symbolic assembler language and macro assembler programming; introduction to assemblers, compilers, data structures, operating systems, and machine architecture.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 543 or permission of instructor.

642* Numerical Linear Algebra U G 5

Numerical treatment of systems of linear equations, inversion of matrices, and characteristic roots and vectors of matrices.

Wi Qtr. 5 cl. Prereq: 541 or 640, and Math 571 or 601.

643* Linear Optimization Techniques in Information Processing U G 5

Theory of linear programming and dualing methods; design and use of computer solutions; post-optimal analysis; computer economics; integer programming.

Au Qtr. 5 cl. Prereq: 222, and Math 571 or 601.

644 Advanced Computer Programming U G 5

Introduction to symbolic assembler language, data structures, and macros; advanced computer programming techniques and application.

Au, Wi Qtrs. 5 cl. Prereq: Grad standing in cptr/inf or permission of instructor. Not open to students with credit for 641.

675 Digital Computer Organization U G 5

Computer system components, hardware programming languages, arithmetic and control units, interrupt and input/output systems, microprogramming, design of computer systems.

Su, Au, Wi Qtrs. 5 cl. Prereq: 543 or grad standing in cptr/inf.

676 Minicomputer Evaluation and Selection U G 3

Evaluation, selection and applications of minicomputers, with a study of available software and a brief discussion of current architecture.

Au Qtr. 3 cl. Prereq: 675 or equiv.

677 Computer Networks U G 3

Concepts and goals of computer networking; structures of computer networks; network control, analysis, design, and management; case studies.

Sp Qtr. 3 cl. Prereq: 675 or equiv.

680 Data Structures U G 5

Data structure configurations; stacks, linked lists, and trees; dynamic storage allocation; searching and sorting techniques.

Su, Wi, Sp Qtrs. 5 cl. Prereq: 641 or 644, and Math 577; or grad standing.

693 Individual Studies U G 1-5

Special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

694 Group Studis U G 1-5

Special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

705 Mathematical Foundations of Computer and Information Science U G 5

Concepts of system theory, formal logic; models of computation; Shannon theory of information for discrete systems; concepts of message, symbols, coding.

Au, Sp Qtrs. 5 cl. Prereq: Grad standing in cptr/inf or permission of instructor.

712* Man-Machine Interface U G 5

Information continuity and system operation; information display and regulation; role and usage of operator in information acquisition and transmissions, automation, machine augmentation of operator function.

Wi Qtr. 5 cl. Prereq: Math 254 and Psych 620.

720 Introduction to Linguistic Analysis U G 5

Introduction to language structure; grammatical description of language; mathematical properties of language representative of information in sentences.

Wi, Sp Qtrs. 5 cl. Prereq: Permission of instructor.

726 Theory of Finite Automata U G 3

Introduction to the mathematical theory of automata; mathematical background, various types of abstract machines, and decomposition theory of finite automata.

Au Qtr. 3 cl. Prereq: 720 or permission of instructor.

727 Turing Machines and Computability U G 3

Turing machines and equivalent models of effective computability; universality and undecidability; recursive functions, recursive and recursively enumerable sets; complexity of computation.

Wi Qtr. 3 cl. Prereq: 705 or 720 or permission of instructor.

728 Topics in Theory of Computing U G 3

Further topics in theory of computing; automata, computability, and formal languages.

Sp Qtr. 3 cl. Prereq: 726 or 727.

730 Basic Concepts in Artificial Intelligence U G 5

Basic concepts of artificial learning and intelligent systems; theories, contemporary models; implementation by hardware and computer simulation.

Wi Qtr. 5 cl. Prereq: 705; prereq or concur: Stat 521.

735 Statistical Methods in Pattern Recognition U G 3

Decision theory models in pattern recognition; parametric and nonparametric methods; linear machines; supervised and unsupervised learning; interactive clustering methods; feature selection; applications.

Sp Qtr. 3 cl. Prereq: 705 and Stat 520, or permission of instructor.

740 Computer Systems Programming II U G 5

Review of advanced batch processing, I/O control and coupled systems; multiprogramming: system deadlock, resource sharing, task synchronization; structure of virtual space and virtual memory systems; data base system architectures.

Au, Sp Qtrs. 5 cl. Prereq: 641 or 644.

Mathematic Foundations of the Design and Use of Automatic Systems I, II, III

See Math 741, 742, and 743.

741 Comparative Operating Systems U G 3

A careful examination of a number of representative computer operating systems.

Su Qtr. 3 cl. Prereq: 641 or 644.

745†* Numerical Solution of Ordinary Differential Equations U G 5

Ordinary differential equations; Milne's method, Simpson's method, Runge-Kutta methods; two-point boundary value problems; experiments using computers.

Wi Qtr. 5 cl. Prereq: 640, or 541 and permission of instructor. Not open to students with credit for 645.

746 Advanced Numerical Analysis U G 5

A careful treatment of some of the principal numerical algorithms; complete error analysis; emphasis on recent developments.

Sp Qtr. 5 cl. Prereq: 642 and 745, or permission of instructor.

750 Modern Methods of Information Storage and Retrieval U G 5

Fundamental and modern concepts of storing and retrieving information; current problems and problem solutions.

Au, Sp Qtrs. 5 cl. Prereq: 543 or equiv or grad standing in cptr/inf. Not open to students with credit for 550. Students should already be familiar with the elements of computer systems.

751†* Fundamentals of Document-Handling Information Systems U G 3

Fundamentals of information systems; types of systems; design principles; inputs; storage and maintenance; outputs; vocabulary control; monitoring and management; performance evaluation.

Wi Qtr. 3 cl. Prereq: 750.

752 Techniques for Simulation of Information Systems U G 3

Introduction to the methodology and techniques of the design of computer simulation of information systems.

Au Qtr. 3 cl. Prereq: Stat 426 or 521.

753* Theory of Indexing U G 5

Purposes of indexes; ordering methods; types of indexes; human and automatic indexing; vocabulary control; coding of information; reliability; compilation and evaluation.

Wi Qtr. 5 cl. Prereq: 750.

754* Language Processing for Information Storage and Retrieval U G 3

Aspects of natural and artificial language processing and its interaction with information storage and retrieval; emphasis on the current state of the art.

Au Qtr. 3 cl. Prereq: 720 and 750.

755 Programming Languages U G 5

Theory and design of assemblers, compilers, and translators for digital computers; comparison of various procedure-oriented languages; implementation techniques.

Sp Qtr. 5 cl. Prereq: 641 or 644. Some knowledge of material in 675 and 680 is recommended.

756 Compiler Design and Implementation U G 4

Analysis of source language and generation of efficient object code, operator and operand stacks, subroutine and function compilation, and optimization techniques; students will write a simple compiler.

Au Qtr. 3 cl. Prereq: 755 and 680. A knowledge of material in 705 and 740 is recommended.

765 Management Information Systems U G 3

Theory and practice of management information systems from the viewpoint of computer and information science; systems approach to management and organization; significance of information.

Wi Qtr. 3 cl. Prereq: 610 and 705, or equiv with written permission of instructor.

775 Advanced Computer Organization U G 3

Specification of microprograms; number representation and arithmetic operations; computer organization and input-output organization.

Au, Sp Qtrs. 3 cl. Prereq: 675, and 641 or 644.

780†* File Structures U G 4

Introduction to the methodology and techniques of file design, and description of techniques that have been used to implement these designs in automated information systems.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 543 and 750.

781 Aspects of Computer Graphics Systems U G 3

Discussion of hardware and software techniques involved in the field of computer graphics. The history of the techniques, the present technological status, and principles of importance in designing systems employing graphics consoles will be covered.

Sp Qtr. 1 2-hr cl. Prereq: 543; and 675, 712, or permission of instructor.

788 Intermediate Studies in Computer and Information Science U G 1-5

Intermediate work in one of the specialized areas of computer and information science is offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs; subdivisions repeatable.

- 788.01 Theory of Information
- 788.02 Information Storage and Retrieval
- 788.03 Theory of Automata
- 788.04 Artificial Intelligence
- 788.05 Pattern Recognition
- 788.06 Computer Systems Programming
- 788.07 Programming Languages
- 788.08 Computer Organization
- 788.09 Numerical Analysis
- 788.10 Man-Machine Interaction
- 788.11 Formal Languages
- 788.12 Management Information Systems
- 788.13 Biological Information Processing
- 788.14 Socio-Psychological Aspects of Information Processing

793 Individual Studies U G 1-5

Special studies not otherwise offered.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

797 Interdepartmental Seminar U G 1-5

See Interdepartmental Seminars.

805* Information Theory in Physical Science G 3-5

Logical structure of measurement and communication, resulting common areas of information theory and physical science; informational nature of organization; informational generalization of physical entropy, applications.

Wi Qtr. 3-5 cl. Prereq: 705 or permission of instructor.

806* Cellular Automata and Models of Complex Systems G 3-5

Cellular automata and formal languages applied to problems of modeling complex systems, possible physical and biological realizations; techniques.

Sp Qtr. 3-5 cl. Prereq: 705 or permission of instructor.

812†* Computer and Information Science Research Methods G 5

Research strategy, statistical evaluation, design, analysis, and interpretation of data obtained from information systems experimentation.

Sp Qtr. 4 cl, 1 2-hr lab. Prereq: Stat 521 and 523.

Human Performance Theory

See Psych 816.

820* Computational Linguistics G 3

Computational techniques in the study of language; contributions of linguistic theory and computer science to language data processing. Students will undertake a project in the area.

Sp Qtr. 3 cl. Prereq: 212, 222, or 542; and 720 or Linguist 601. Repeatable to a maximum of 6 cr hrs.

835†* Special Topics in Pattern Recognition G 3

Image processing, scene analysis techniques, formal grammars and structural methods in pattern description, patterns and algorithms, character recognition, bio-medical, and other applications.

Au Qtr. 3 cl. Prereq: 735 and Stat 521, or permission of instructor.

840* Operating System Implementation G 3

Advanced concepts in job, task, data, and memory management; multiprogramming and multiprocessing; implementation on a typical computer.

Sp Qtr. 3 cl. Prereq: 740.

845* Numerical Solution of Partial Differential Equations G 5

Numerical solution of partial differential equations by finite-difference methods; treatment of parabolic, hyperbolic, and elliptic equations, consistency, convergence, and stability considerations.

Sp Qtr. 5 cl. Prereq: 642 and 745.

850†* Theory of Information Retrieval I G 3

Correlation of information retrieval theory and practice into a unified theory of information retrieval; existing and proposed retrieval systems will be examined and evaluated.

Wi Qtr. 3 cl. Prereq: 543 and 753.

852* Design and Analysis of Information Systems Simulations G 3

Consideration of the strategic and tactical problems of planning information systems simulation; analysis of the results of information systems simulation experiments; studies of significant information systems simulations.

Wi Qtr. 3 cl. Prereq: 652 or 752.

855* Advanced Topics in Programming Languages G 3

Advanced topics in formal descriptions of semantics and syntax of programming languages, and current techniques in processing programming languages; current literature.

Sp Qtr. 3 cl. Prereq: 755.

865 Seminar on Socio-Psychological Aspects of the Information Sciences G 3

Ecological, organizational, interpersonal, and intrapersonal aspects of information, production, exchange, and use.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

880†* Advanced Theory of Computability G 3

Machine-independent recursive function theory; enumeration, iteration, and recursion theorems; creative and productive sets; strong and weak reducibilities; degrees of unsolvability.

Sp Qtr. 3 cl. Prereq: 727 or permission of instructor.

888 Advanced Studies in Computer and Information Science G 1-5

Advanced work in one of the specialized areas of computer and information science.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs; subdivisions repeatable.

- 888.01 Theory of Information
- 888.02 Information Storage and Retrieval
- 888.03 Theory of Automata
- 888.04 Artificial Intelligence
- 888.05 Pattern Recognition
- 888.06 Computer Systems Programming
- 888.07 Programming Languages
- 888.08 Computer Organization
- 888.09 Numerical Analysis
- 888.10 Man-Machine Interaction
- 888.11 Formal Languages
- 888.12 Management Information Systems
- 888.13 Biological Information Processing
- 888.14 Socio-Psychological Aspects of Information processing

889 Advanced Seminar in Computer and Information Science G 1-5

Selected topics of particular current interest in both the research and applications of computer and information science are considered.

Su, Au, Wi, Sp Qtrs. 1-5 cl. Prereq: 2nd qtr grad standing in Cptr/Inf or permission of instructor.

894 Group Studies G 1-5

Special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

899 Interdepartmental Seminar G 1-5

See under Interdepartmental Seminars.

999 Research G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Dairy Science

Office: 116 Plumb Hall, 625 Stadium Drive, 422-6851

Domestic Animals in the Service of Man

See Animl Sc 100. Offered in cooperation with Dairy Science and Poultry Science.

General Prerequisites for Courses Numbered 200

Unless otherwise indicated, the prerequisites for 200-level courses are 45 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-199.

201 Fundamentals of Dairy Science U 5

The production phases of the dairy industry and the physiological systems of dairy animals. Brakel.

Au, Wi Qtrs. 3 cl, 2 2-hr lab. Prereq: Botany/Zoology 110.

207 Dairy Cattle Type Evaluation U 3

Dairy breed type standards and their application to herd improvement. Kaeser.

Sp Qtr. 1 2-hr lab, 1 4-hr lab. Prereq: 201 and 15 cr hrs in biological sciences.

General Prerequisites for Courses Numbered 300 and 400

Unless otherwise indicated, the prerequisites for 300 and 400-level courses are 90 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-399.

340 Dairy Herd Management U 5

Problems and practices concerned with efficient production of milk and successful operation of a dairy herd. Kaeser.

Wi Qtr. 3 cl, 2 2-hr lab. Prereq: 201 and 430.

420 Principles of Animal Improvement U 5

An introduction to the methods available for bringing about genetic change in farm animals. Fechtmeier, Irvin, and Swiger.

Au, Wi, Sp Qtrs. 5 cl. Prereq: Animl Sc 100, Math 148 or equiv, and Genetics 140. Not open to students with credit for Animl Sc 420 or Pltry Sc 420. Cross-listed in Animal Science and Poultry Science.

Marketing Dairy Products

See Agr Econ 426. Offered in cooperation with Agricultural Economics and Rural Sociology.

430 Principles of Animal Nutrition U 5

A study of fundamental principles of nutrition in mammals and birds. Cline, Latshaw, and Tyznik.

Su (1st term), Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: Chem 102 or 122, and Math 148 or equiv. Not open to students with credit for Animl Sc 430 or Pltry Sc 430. Cross-listed in Animal Science and Poultry Science.

General Prerequisites for Courses Numbered 500

Unless otherwise indicated, the prerequisites for 500-level courses are 15 cr hrs in courses in the same discipline numbered 200 or higher, or 10 cr hrs in courses numbered 200 or higher in the same discipline, plus 10 cr hrs in courses numbered 200 or higher in specified allied disciplines; or baccalaureate degree.

520 Genetic Improvement of Dairy Cattle U G 3

Selection and mating methods specific for dairy cattle are covered; view of improvement as an integration of genetical, environmental and management alternatives is developed. Allaire.

Wi Qtr. 22-hr cl. Prereq: 420 or Animl Sc 420 or Pltry Sc 420.

593 Individual Studies U 3-5

Special assignments and elementary research; students elect problems after conference with the instructor in charge.

Su, Au, Wi, Sp Qtrs. H593 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Prereq: Written permission of instructor.

General Prerequisites for Courses Numbered 600

Unless otherwise indicated, the prerequisites for 600-level courses are 15 cr hrs in courses in the same discipline numbered 300 or higher, or 10 cr hrs in courses numbered 300 or higher in the same discipline, plus 10 cr hrs in courses numbered 300 or higher in specified allied disciplines.

610 Physiology of Lactation U G 3

The physiological, endocrine, nutritional, and environmental factors influencing the synthesis and ejection of milk. Porter.

Au Qtr. 2 2-hr cl. Prereq: Vet Phys 411 and 20 cr hrs in animl sc, dairy sc, or vertebrate biology. Not open to students with credit for Animl Sc 610. Cross-listed in Animal Science.

612 Physiology of Reproduction and Growth U G 3

Physiology of the reproductive system and growth and development in farm animals; factors influencing reproductive performance. Kinder and Ludwick.

Au, Sp Qtrs. 3 cl. Prereq: Vet Phys 411 and 20 cr hrs in animl sc, dairy sc, or vertebrate biology. Not open to students with credit for Animl Sc 612. Cross-listed in Animal Science.

613 Laboratory in Reproductive Physiology and Artificial Insemination U G 3

Comparative anatomy and physiology of reproduction of farm animals; physiological bases for the use of artificial insemination in the research laboratory and in the field. Ludwick.

Au, Sp Qtrs. 2 2-hr lab. Prereq or concur: 612. Not open to students with credit for Animl Sc 613. Cross-listed in Animal Science.

631 Nutrition and Feeding of Ruminant Animals U G 5

The nutrition of dairy cattle, beef cattle and sheep; principles and practices. Cline, Staubus, and Tyznik.

Su, Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 430 or equiv. Not open to students with credit for Animl Sc 631. Cross-listed in Animal Science.

640 Evaluation and Integration of Research for Dairy Operations U G 5

The integration of scientific principles to maximize

efficiency in dairy operations. Brakel.

Sp Qtr. 5 cl. Prereq: 201, 340, 420, 430, Agr Econ 310.01, or 310.02, and 5 cr hrs physiol.

694 Group Studies U G 3-5

Special assignments and advanced research for groups; problems assigned after consultation with the instructor in charge.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

General Prerequisites for Courses Numbered 700

Unless otherwise indicated, the prerequisites for 700-level courses are 15 cr hrs in courses in the same discipline numbered 400 or higher, plus additional specified courses numbered 600 or higher.

710 Advanced Reproductive Physiology U G 3 or 5

Recent advances in research in mammalian reproduction; optional individual research experience in reproductive problems with small and large mammals for additional credit. Gomes.

Sp Qtr. 2 2-hr cl. Prereq: 612 and acceptable courses in physiol, anatomy, and biochem. Not open to students with credit for Animl Sc 710. Cross-listed in Animal Science.

721 Genetics of Animal Populations I U G 3

Parameters of static populations, genetic arrays and equilibria and statistical measures; partitioning the phenotypic variance mutation, migration, selection and chance. Swiger.

Wi Qtr. 3 cl. Prereq: 420 or Genetics 500 and Genetics 650 or equiv. Not open to students with credit for Animl Sc or Pltry Sc 721. Cross-listed in Animal Science and Poultry Science.

722 Genetics of Animal Populations II U G 3

Selection for polygenic characters, mating systems and development of breeding plans. Swiger.

Sp Qtr. 3 cl. Prereq: 721 or Animl Sc 721 or Pltry Sc 721 or equiv. Not open to students with credit for Animl Sc or Pltry Sc 722. Cross-listed in Animal Science and Poultry Science.

General Prerequisites for Courses Numbered 800 and 900

Unless otherwise indicated, the prerequisites for 800 and 900-level courses are 30 cr hrs in courses in the same discipline, or 20 cr hrs in the same discipline, plus 25 cr hrs in specified allied disciplines.

800 Seminar G 1

Discussion of current dairy science or related areas.

Au, Wi, Sp Qtrs. 1 cl.

810 Advances in Physiology of Domestic Animals G 3

Au, Wi, Sp Qtrs. 4-hr cl. Prereq: Written permission of instructor and acceptable courses in physiol, anatomy, and biochem. Not open to students with credit for Animl Sc 810 or Pltry Sc 810. Cross-listed in Animal Science and Poultry Science.

810.01 Anterior Pituitary Function

Bacon.

Au Qtr.

810.02 Endocrinology of Reproduction

Gomes.

Wi Qtr.

810.03 Immunology and Immunogenetics

Hines.

Sp Qtr.

810.04†* Thyroid and Parathyroid Function

Au Qtr.

810.05†* Mammalian Germ Cells

Murray.

Wi Qtr.

810.06†* Biometeorology and Animal Performance

Ludwick.

Wi Qtr.

820 Current Topics in Animal Genetics G 3

3 cl. Prereq: Acceptable courses in animal genetics, math, and statistics. Repeatable to a maximum of 12 cr hrs. Not open to students with credit for Animl Sc 820 or Pltry Sc 820. Cross-listed in Animal Science and Poultry Science.

820.01†* Selection Index Theory

Allaire.

Au Qtr.

820.02* Non-additive Genetic Variance

Harvey and Swiger.

Wi Qtr.

820.03* Polymorphic Systems

Fechheimer.

Wi Qtr.

820.04†* Simulation of Genetic Systems

Harvey.

Wi Qtr.

820.05†* Cytogenetics of Animal Populations

Fechheimer.

Wi Qtr.

820.06†* Physiological Indices in Animal Breeding

Fechheimer.

Au Qtr.

830 Advanced Studies in Nutrition G 3

Au, Wi, Sp Qtrs. 3 or 4 cl. Prereq: 631 or Animl Sc 630 or Pltry Sc 630 or Humn Ntr 610; Fd Sc&Nu 761 and 762; and 10 grad cr hrs in physiol. Not open to students with credit for Animl Sc 830, Humn Nutr 830 or Pltry Sc 830. Cross-listed in Animal Science, Human Nutrition and Food Management and Poultry Science.

830.01* Energy

Byers and Conrad.

Au Qtr.

830.02* Minerals

Cline.

Wi Qtr.

830.03* Proteins and Amino Acids

Naber, and Vivian.

Sp Qtr.

830.04†* Vitamins

Naber.

Au Qtr.

830.05†* Lipids

Palmquist.

Wi Qtr.

830.06†* Laboratory Methods in Nutrition

Sp Qtr.

830.07* Rumen Microbiology

Dehority.

Su Qtr. This course not available in Poultry Science.

885 Research Principles and Methods G 5

Survey and analysis of research in dairy and animal science, literature reviews, collection of data, preparation of bibliographies, and presentation of reports. Gomes.

Sp Qtr. 3 cl, 14-hr lab. Prereq: Genetics 650, 8 cr hrs in math, and 2 qtrs grad study.

894 Group Studies G 1-5

Students are given an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor.

898 Interdepartmental Seminar in Nutrition G 1

See Interdepartmental Seminars.

Sp Qtr.

993 Individual Studies G 3 or 5

Exploratory research and advanced assignments; students elect problems after conference with the instructor in charge.

Su, Au, Wi, Sp Qtrs.

999 Research G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Dance

Office: 132 Sullivant Hall, 1813 North High Street, 422-7977

111 Techniques and Materials of Dance U 3

Technique: modern dance and ballet; improvisation.

Au Qtr. 11 lab hrs. Prereq: Admission by qualifying audition. Required of majors in dance.

112 Techniques and Materials of Dance U 3

Continuation of 111.

Wi Qtr. 11 lab hrs. Prereq: 111 or qualifying audition. Required of majors in dance.

113 Techniques and Materials of Dance U 3

Continuation of 112.

Sp Qtr. 11 lab hrs. Prereq: 112. Required of majors in dance.

190 Ethnic Dance Forms U 3

Folk forms as practiced by ethnic groups in selected cultures.

Au Qtr. 5 lab hrs. Open only to dance majors.

197† Orientation to Dance U 2

Introduction to dance as an art discipline and as a major area of study in higher education.

Au Qtr. 4 lab hrs. Open only to prospective dance majors. Required of all freshmen and transfer students who intend to major in dance.

198 Dance Production Workshop U 1-5

Production activities.

Au, Wi, Sp Qtrs. Arr. Open only to dance majors.

Repeatable to a maximum of 15 cr hrs.

200 Dance in the 20th Century U 3

Dance as a performing art in Europe and America; a survey of major stylistic trends, principal artists and their works.

Au, Wi, Sp Qtrs. 4 cl. Not open to students with credit for 138.

201 Introduction to Dance I U 2

An introductory course in dance for non-majors.
 Au Qtr. Prereq: Written permission of chairman. Not open to dance majors. Repeatable to a maximum of 6 cr hrs.

202 Introduction to Dance II U 2

An introductory course in dance for non-majors.
 Wi Qtr. Prereq: Written permission of chairman. Not open to dance majors. Repeatable to a maximum of 6 cr hrs.

203 Introduction to Dance III U 2

Continuation of 201 and 202.
 Sp Qtr. Prereq: Written permission of chairman. Not open to dance majors. Repeatable to a maximum of 6 cr hrs.

214 Dance Techniques II U 2-6

Techniques: modern dance and ballet, level II.
 Repeatable to a maximum of 6 cr hrs for each decimal subdivision.

214.01 Part 1

Au Qtr. Arr. Prereq: 113 or qualifying audition. Required of majors in dance.

214.02 Part 2

Wi Qtr. Arr. Prereq: 214.01 or 214 or qualifying audition. Required of majors in Dance.

214.03 Part 3

Sp Qtr. Arr. Prereq: 214.02 or 215. Required of majors in Dance.

248 Reconstruction, Analysis, and Teaching of Folk Dance Forms U 3

Movement techniques and styles inherent in folk dance forms with application to teaching.
 Au Qtr. 5 lab hrs.

289 Field Service Experience U 2-5

Professional service with children, youth, or adults in the schools or community.
 Su, Au, Wi, Sp Qtrs. Prereq: 113 or permission of dance education coordinator. Open only to prospective dance majors. Repeatable to a maximum of 20 cr hrs.

293 Individual Studies U 1-5

Individual studies of specified problems in the field of dance.
 Su, Au, Wi, Sp Qtrs. Prereq: Permission of chairman. Repeatable to a maximum of 15 cr hrs.

294 Group Studies U 1-5

Prereq: Permission of chairman. Repeatable to a maximum of 25 cr hrs.

299 Dance Performance U 2-5

Au, Wi, Sp Qtrs. 2 or more hrs rehearsal each week. Open only to dance majors; others by special permission of chairman. Each decimal subdivision repeatable to a maximum of 12 cr hrs.

299.01 University Dance Company

Prereq: Admission by audition to students enrolled in a dance major curriculum. Not open to students with 12 cr hrs in 299.

299.04 Student Choreographic Projects

Prereq: Permission of chairman.

299.06 Workshops

Prereq: Permission of chairman.

534 Dance Techniques III U G 2-6

Techniques: modern dance and ballet, level III.
 Repeatable to a maximum of 12 cr hrs for each decimal subdivision.

534.01 Part 1

Au Qtr. Arr. Prereq: 214.03 or 216 or qualifying audition.

534.02 Part 2

Wi Qtr. Arr. Prereq: 534.01 or 534 or qualifying audition.

534.03 Part 3

Sp Qtr. Arr. Prereq: 534.02 or 535.

586 Student Teaching in Dance in Elementary Schools U 3-15

Observation, participation, and teaching in a public school; individual and group conferences or seminars.

Au, Wi, Sp Qtrs. Prereq: Ed 4th yr standing. Repeatable to a maximum of 15 cr hrs.

587 Student Teaching in Dance in Secondary Schools U 3-15

Observation, participation, and teaching in a public school; individual and group conferences or seminars.

Au, Wi, Sp Qtrs. Prereq: Ed 4th yr standing. Repeatable to a maximum of 15 cr hrs.

601 Supplemental Studies in Dance U G 1-5

Foundations in dance.

Au, Wi, Sp Qtrs. 2 or more lab hrs. Open only to dance majors; others by written permission of chairman. Each decimal subdivision repeatable to a maximum of 12 cr hrs.

601.01 Modern Technique**601.02 Ballet Technique****601.03 Dance Technique for Men****601.04 Tap Dance****601.05 Historical Dance****620 Dance Notation I U G 3**

Basic principles of Labanotation; work in theory, reading, and writing.

Au, Wi Qtrs. 4 lab hrs, 2 hrs arr. Not open to students with credit for 438.

621 Dance Notation II U G 3

Continuation of 620.

Wi, Sp Qtrs. 4 lab hrs, 2 hrs arr. Prereq: 620 or written permission of instructor. Not open to students with credit for 439.

622 Notation III U G 3

Reading, analyzing, and dancing excerpts from dance scores.

Au, Sp Qtrs. 4 lab hrs, 2 hrs arr. Prereq: 620, 621 or equiv with written permission of instructor.

623 Advanced Notation U G 3

Advanced Labanotation.

Sp Qtr. 4 lab hrs. Prereq: 622 or equiv with written permission of instructor. Repeatable to a maximum of 9 cr hrs. Not open to students with credit for 600.

633 Dance Production U G 5

A study of the production problems in staging dance for the theatre; lectures, readings, and discussions.

Au, Wi, Sp Qtrs. 12 lab hrs, 2 hrs arr. Prereq: 198 or equiv. Not open to students with credit for 533.

637 Dance Technique IV U G 2-6

Techniques: modern and ballet, level IV.

Repeatable to a maximum of 12 cr hrs for each decimal subdivision.

637.01 Part 1

Au Qtr. Arr. Prereq: 534.03 or 536 or equiv.

637.02 Part 2

Wi Qtr. Arr. Prereq: 637.01 or 637 or equiv.

637.03 Part 3

Sp Qtr. Arr. Prereq: 637.02 or 638 or equiv.

**645 Foundations in Dance
Composition I U G 1-5**

Au Qtr. 2 2-hr labs. Prereq: 113 or equiv. Open only to dance majors. Repeatable to a maximum of 12 cr hrs.

**646 Foundations in Dance
Composition II U G 1-5**

Wi Qtr. 2 2-hr labs. Prereq: 645. Open only to dance majors. Repeatable to a maximum of 12 cr hrs.

**647 Foundations in Dance
Composition III U G 1-5**

Sp Qtr. Arr. Prereq: 646. Open only to dance majors. Repeatable to a maximum of 12 cr hrs.

648 Music for Choreography U G 3

Study of music suitable for choreographic purposes and the various approaches to the use of music in dance composition.

Au Qtr. 4 lab hrs, 2 hrs arr. Prereq: 216 or equiv. Not open to students with credit for 537.

**649 Intermediate Dance
Composition U G 3**

Problems in extended solos; duets.

Au Qtr. 6 lab hrs, 2 hrs arr. Prereq: 647. Not open to students with credit for 532.

650 Advanced Dance Composition U G 4

Choreographing a group dance; experience in casting and directing.

Sp Qtr. 9 lab hrs. Prereq: 649 or equiv.

651 Repertory U G 1-5

Experience in learning a dance.

Au Qtr. Arr. Prereq: 216 and permission of instructor. Open only to dance majors. Repeatable to a maximum of 12 cr hrs for each decimal subdivision.

651.01 Established Work**651.02 New Work****657 History of Dance I U G 3**

Survey of dance as a communal activity, functioning as ritual, art, and play, with particular emphasis on dance in tribal cultures and in the Greek theatre.

Au Qtr. 4 cl.

658 History of Dance II U G 3

Survey of dance from medieval times to the late 18th century, with particular emphasis on dance styles of the 15th through the 18th centuries.

Wi Qtr. 4 cl.

659 History of Dance III U G 3

Survey of dance in Europe and the United States from the end of the 18th century to the present with emphasis on ballet and modern dance.

Sp Qtr. 4 cl.

**688 Theory and Practice
of Modern Dance U G 3**

Foundations for teaching; laboratory problems, lectures, readings, and discussions.

Sp Qtr. 5 lab hrs, 2 hrs arr. Prereq: 216 or equiv. Not open to students with credit for 531.

**689 Directed Teaching Experience
in Dance U G 2**

Au, Wi, Sp Qtrs. 4 lab hrs, 2 hrs arr. Prereq: Written

permission of coordinating adviser. Repeatable to a maximum of 6 cr hrs. Not open to students with 6 cr hrs. for 589.

691 Dance Practicum I U G 1-5

Special applied projects for upper level dance majors.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of chairman. Repeatable to a maximum of 30 cr hrs.

692 Workshop in Dance U G 5, 10 or 15

Concentrated study of dance and related areas; nature of workshop depends upon selected emphasis.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of workshop director. Repeatable to a maximum of 15 cr hrs.

693 Individual Studies in Dance U G 1-5

Investigation of selected professional problems.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 20 cr hrs in any combination of decimal subdivisions for undergrad cr and to a maximum of 30 cr hrs in any combination of decimal subdivisions for grad cr.

693.01 Choreography

Prereq: 649. Open only to dance majors.

693.02 Notation

Prereq: Written permission of dance advisor or chairman.

693.03 Research

Prereq: Written permission of dance advisor or chairman. Open only to dance majors.

693.04 Production

Prereq: Written permission of dance advisor or chairman. Open only to dance majors.

693.05 Other

Prereq: Permission of chairman.

694 Group Studies U G 1-5

Prereq: Permission of chairman. Repeatable to a maximum of 25 cr hrs.

699 Dance Performance U G 2-5

Au, Wi, Sp Qtrs. 2 or more hrs of rehearsal each wk. Open only to dance majors; others by special permission of chairman. Each decimal subdivision repeatable to a maximum of 12 cr hrs.

699.01 University Dance Company

Prereq: Admission by audition to students enrolled in a dance major curriculum.

699.04 Student Choreographic Projects

Prereq: Permission of chairman.

699.06 Workshops

Prereq: Permission of chairman.

801 Seminar in Dance G 1-5

Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

802 Choreographic Projects G 3-5

Advanced choreographic projects.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 25 cr hrs.

894 Group Studies G 1-5

Advanced problems in dance, individual or group participation.

Repeatable to a maximum of 30 cr hrs.

999 Research in Dance G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

Dental Hygiene

Office: 3070 Postle Hall, 305 West 12th Avenue,
422-2228

201 Dental Anatomy U 3

The morphology of human teeth and surrounding structures. Woelfel.

Au Qtr. 1 cl, 6 lab hrs. Prereq: Dent hyg 1st yr standing.

203 Dental Anatomy U 2

A continuation of 201; the physiology of human teeth and surrounding structures. Woelfel.

Wi Qtr. 1 cl, 2 lab hrs. Prereq: Dent hyg 1st yr standing.

223 Dental Prophylaxis U 3

The demonstration of and the application of technical procedures for the removal of hard and soft deposits from the surfaces of the teeth. Reynolds and Hockman.

Wi Qtr. 1 cl, 6 lab hrs. Prereq: Dent hyg 1st yr standing.

224 Dental Prophylaxis

Prereq: Dental hygiene 1st yr standing.

224.01 Lecture U 1

A study of the roles of dental specialties in the practice of dental hygiene.

224.02 Clinic U 1

Clinical application of the principles and technical procedures taught in 223.

233 Oral Histology and Embryology U 2

A study of the microscopic anatomy of the teeth and surrounding structures; the development of the teeth, oral cavity and face. Melfi.

Wi Qtr. 2 cl. Prereq: Dent hyg 1st yr standing.

234 Restorative Dentistry and Expanded Functions for Dental Hygienists U 3

A study of selected materials and techniques used in operative dentistry and prosthodontics which will prepare the student for clinical performance. Woelfel.

Sp Qtr. 1 cl, 6 lab hrs. Prereq: Dent hyg 1st yr standing.

235 Pedodontics for the Dental Hygienist U 2

Demonstration and application of techniques and procedures to prepare the dental hygienist for providing care for children. Bowers.

Sp Qtr. 1 cl, 2 hrs lab. Prereq: Dent hyg 1st yr standing.

236 Chemistry for Dental Hygienists U 3

A survey of general chemical principles and an introduction to fundamental physiological applications of organic chemistry for dental hygiene students. Foreman.

Sp Qtr. 3 cl. Prereq: Dent hyg 1st yr standing. Not open to students with credit for 335.

263 Oral Radiography U 1 or 2

The theory and technical procedures of oral radiography. Pappas.

Sp Qtr. 2 cl, or 6 lab hrs. Prereq: Dent hyg 1st yr standing or sr standing in radiologic technology. Not open to students with credit for 361.

273 Dental Materials U 1

A study of the composition, chemical and physical properties, manipulation, and uses of various materials employed in the practice of dentistry. Woelfel.

Sp Qtr. 1 cl. Prereq: Dent hyg 1st yr standing. Not open to students with credit for 372.

283 Periodontology U 1

A study of the formation of deposits on teeth, the maintenance of good oral hygiene, and the prevention of periodontal disease. App.

Sp Qtr. 1 cl. Prereq: Dent hyg 1st yr standing.

295 Survey of Dental Hygiene U 1

The historical, professional, legal, ethical and preventive aspects of dental hygiene. Reynolds.

Au Qtr. 1 cl. Prereq: Dent hyg 1st yr standing.

301 Pain Control U 1

The role of the dental hygienist as an assistant in anesthesia; premedication; physiological responses to and pharmacological actions of anesthetic agents; emergency treatment. Snyder.

Wi Qtr. 1 cl or 3 lab hrs. Prereq: Dent hyg 2nd yr standing.

303 Office Practices and Economics U 2

The role of the dental hygienist in dental practice and the economics involved. McCuen.

Sp Qtr. 2 cl. Prereq: Dent hyg 2nd yr standing.

311 Preventive Dentistry U 2

A study of the principles of prevention of dental disease, including plaque control, diet and nutrition, and fluoride theory. Reynolds and Nordstrom.

Au Qtr. 2 cl. Prereq: Dent hyg 2nd yr standing.

312 Advanced Dental Hygiene Procedures U 2

A study of techniques and theory which extends beyond the routine practice of dental hygiene and which involves dental practice. Reynolds.

Wi Qtr. 2 cl. Prereq: Dent hyg 2nd yr standing.

313 Dental Hygiene Practice U 1

A study of the actual practice in the dental office and of the responsibilities inherent in dental hygiene to the profession and the community. Reynolds.

Sp Qtr. 1 cl. Prereq: Dent hyg 2nd yr standing.

321 Clinical Dental Prophylaxis U 4

Clinical application of principles taught in 223. Reynolds.

Au Qtr. 12 clinic hrs. Prereq: Dent hyg 2nd yr standing.

322 Clinical Dental Prophylaxis U 5

A continuation of 321. Reynolds.

Wi Qtr. 14 clinic hrs. Prereq: Dent hyg 2nd yr standing.

323 Clinical Dental Prophylaxis U 4

A continuation of 322. Reynolds.

Sp Qtr. 12 clinic hrs. Prereq: Dent hyg 2nd yr standing.

331 Pharmacology U 1

A study of drugs commonly used in dental practice and correct methods for their use. Reynolds.

Au Qtr. 1 cl. Prereq: Dent hyg 2nd yr standing.

334 Chemistry for Dental Hygienists U 2

Application of the principles of biological chemistry to the practice of dental hygiene. Foreman.

Au Qtr. 2 cl. Prereq: 236. Not open to students with credit for 335.

341 Introduction to General and Oral Pathology U 3

Basic principles of pathology; interpretation of the patient's medical history, pathogenesis and symptomatology of oral disease. Bruce and Cavalaris.

Au Qtr. 3 cl. Prereq: Dent hyg 2nd yr standing.

381 Community Dental Health U 1

An introduction to community dental health and the planning and initiation of community dental health projects. Uldricks.

Au Qtr. 1 cl. Prereq: Dent hyg 2nd yr standing.

382 Oral Hygiene in the Schools U 2

The principles involved in effective dental health education of the general public, especially school children. Daugherty.

Wi Qtr. 2 cl. Prereq: Dent hyg 2nd yr standing.

383 Community Dental Health U 1

A continuation of 381. An application of the principles learned in 381, the continuation and evaluation of community dental health projects. Daugherty.

Sp Qtr. 1 cl. Prereq: Dent hyg 2nd yr standing.

588 Student Teaching in Dental Hygiene Education U 3-15

Observation, participation, and responsible teaching in a public school in the greater Columbus area; individual and group conferences or seminars. Daugherty.

Au, Wi, Sp Qtrs. Arr. Prereq: Dental hygiene education 4th yr standing. A minimum of 15 cr hrs is required.

693 Individual Studies in Dental Hygiene U G 1-5

Advanced studies in any relevant area of dental hygiene. Reynolds.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission. Repeatable to a maximum of 15 cr hrs.

694 Group Studies in Dental Hygiene U G 1-5

Group studies in special dental hygiene areas. Reynolds.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission. Repeatable to a maximum of 15 cr hrs.

Dentistry

Office: 1159 Postle Hall, 305 West 12th Avenue, 422-2401

411 Dental Materials I P 1

A review of physical properties of materials; a study of dental impression materials, cast materials, and denture base resins. Zardiackas.

Su Qtr. 1 cl. Prereq: Dent fresh standing. Not open to students with credit for 305 or 411 prior to Su Qtr 1977.

417 Occlusion I P 3

Dental morphology: The structure and function of the teeth and their contiguous parts, particularly mastication through occlusion. Huffman.

Su Qtr. 2 cl, 3 lab hrs. Prereq: Dent fresh standing. Not open to students with credit for 307 prior to Su Qtr 1977.

418 Occlusion II P 3

A continuation of 417.

Au Qtr. 2 cl, 3 lab hrs. Prereq: Dent fresh standing. Not open to students with credit for 308 prior to Su Qtr 1977.

419 Occlusion III P 3

A continuation of 418.

Wi Qtr. 2 cl, 3 lab hrs. Prereq: Dent fresh standing. Not open to students with credit for 309 prior to Su Qtr 1977.

420 Orientation and History of Dentistry P 1

The evaluation of dentistry from the ancient period through the medieval, colonial, early American, and modern periods. Howell.

Su Qtr. 1 cl. Prereq: Dent fresh standing. Not open to students with credit for 320 prior to Su Qtr 1977.

421 Community Dentistry I P 1

Newer concepts of dental care which are the result of changes in environment, legislation and dental delivery systems. Humphrey.

Su Qtr. 1 cl. Prereq: Dent fresh standing. Not open to students with credit for 324 prior to Su Qtr 1977.

422 Community Dentistry II P 1

Basic concepts in disease control principles of epidemiology, review of dental indices of disease, and a study of dental disease in a community: prevalence, increment, and distribution. Humphrey.

Au Qtr. 1 cl. Prereq: Dent fresh standing. Not open to students with credit for 325 prior to Su Qtr 1977.

423 Community Dentistry III P 1

Preventive dentistry, etiology of dental disease, clinical signs and symptoms, disease control, therapeutic and preventive agents, materials and techniques, and actualizing the potential in private practice. Di Orio.

Wi Qtr. 1 cl. Prereq: Dent fresh standing. Not open to students with credit for 326 prior to Su Qtr 1977.

461 Periodontology I P 2

Preventive periodontics including periodontal morphology, incidence of periodontal disease, clinical gingival health and disease, and etiology and prevention of disease. App.

Su Qtr. 2 cl or 2 lab hrs. Prereq: Dent fresh standing. Not open to students with credit for 361 or 461 prior to Su Qtr 1977.

481 Removable Complete Prosthodontics I

Prereq: Dent fresh standing. Not open to students with credit for 381 prior to Su Qtr 1977.

481.01 Lecture P 1

The elemental principles of impressions and jaw relations.

Su Qtr. 1 cl. Not open to students with credit for 381.01 prior to Su Qtr 1977.

481.02 Laboratory P 2

Su Qtr. 6 lab hrs. Not open to students with credit for 381.02 prior to Su Qtr 1977.

482 Removable Complete Prosthodontics II

Prereq: Dent fresh standing. Not open to students with credit for 382 prior to Su Qtr 1977.

482.01 Lecture P 1

The principles and practices of arranging artificial teeth and processing and finishing complete dentures.

Au Qtr. 1 cl. Not open to students with credit for 382.01 or 482.01 prior to Su Qtr 1977.

482.02 Laboratory P 2

Au Qtr. 6 lab hrs. Not open to students with credit for 382.02 or 482.02 prior to Su Qtr 1977.

489 Removable Partial Prosthodontics I

Prereq: Dent fresh standing. Not open to students with credit for 389 prior to Su Qtr 1977.

489.01 Lecture P 1

An introduction to the principles of design and construction of removable partial dentures. Svensson.

Wi Qtr. 1 cl. Not open to students with credit for 389.01 prior to Su Qtr 1977.

489.02 Laboratory P 2

Wi Qtr. 6 lab hrs. Not open to students with credit for 389.02 prior to Su Qtr 1977.

505 Oral Surgery I P 1

The chemistry and pharmacology of local anesthesia and an introduction to the basic principles of oral surgery.

Su Qtr. 1 cl. Prereq: Dent soph standing. Not open to students with credit for 501 prior to Su Qtr 1977.

506 Oral Surgery II P 1

Theory and technique of basic exodontia and minor oral surgery; postoperative complications and treatment.

Au Qtr. 1 cl. Prereq: Dent sophomore standing. Not open to students with credit for 502 prior to Su Qtr 1977.

511 Dental Materials II P 1

Materials used in the restoration of carious teeth, including dental cements, waxes, plastics, amalgams, gold foil, and casting gold alloys. Zardiackas.

Sp Qtr. 1 cl. Prereq: Dent soph standing. Not open to students with credit for 306 prior to Su Qtr 1977.

512 Dental Materials III P 1

A study of dental casting procedures and associated materials, dental gold alloy and base metal wires, chrome-cobalt and steel alloys, heat treatment of metals, welding and soldering procedures, and abrasives and polishing agents. Zardiackas.

Su Qtr. 1 cl. Prereq: Dent soph standing. Not open to students with credit for 404 prior to Su Qtr 1977.

514 Oral Biology I P G 4

Oral embryology and histology of teeth and surrounding structures and their correlation to the practice of dentistry. Melfi.

Sp Qtr. 2 cl, 4 lab hrs. Prereq: Dent soph standing, Anat 603. Not open to students with credit for 540 prior to Su Qtr 1977.

517 Occlusion IV P 2

A study of the changes in the masticatory systems which cause an unhealthy occlusion. Huffman.

Sp Qtr. 1 cl, 3 lab hrs. Prereq: Dent soph standing. Not open to students with credit for 407 prior to Su Qtr 1977.

518 Occlusion V P 2

A continuation of 517.

Su Qtr. 1 cl, 3 lab hrs. Prereq: Dent soph standing. Not open to students with credit for 408 prior to Su Qtr 1977.

519 Occlusion VI P 2

A continuation of 518.

Au Qtr. 1 cl, 3 lab hrs. Prereq: Dent soph standing. Not open to students with credit for 409 prior to Su Qtr 1977.

531 Operative Dentistry I P 2

An introduction to the principles of operative dentistry; the theory and techniques for simple cavity preparations. H. Postle and Huffman.

Sp Qtr 1 cl, 3 lab hrs. Prereq: Dent soph standing. Not open to students with credit for 431 or 531 prior to Su Qtr 1977.

532 Operative Dentistry II P 3

The theory and technical procedures for the

preparation of compound and complex cavities and the use of amalgams and silicate as restorative materials. H. Postle and Huffman.

Au Qtr. 1 cl, 6 lab hrs. Prereq: Dent soph standing. Not open to students with credit for 432 or 532 prior to Su Qtr 1977.

533 Operative Dentistry III P 3

The theory and technical procedures for the use of gold inlays and gold as restorative materials; preparation for the clinical aspects of operative dentistry. H. Postle and Huffman.

Au Qtr. 1 cl, 6 lab hrs. Prereq: Dent soph standing. Not open to students with credit for 433 or 533 prior to Su Qtr 1977.

543 Oral Pathology I P G 4

The histopathologic and clinical study of oral disease processes that are chiefly of local origin. Cavalaris.

Au Qtr. 2 cl, 2 lab hrs. Prereq: Dent soph standing, 514 and Path 655. Not open to students with credit for 541 prior to Su Qtr 1977.

544 Physical Evaluation I P 1

The principles and methods of diagnosis, with emphasis on the medical history of the patient as it pertains to dental treatment.

Sp Qtr. 1 cl. Prereq: Dent soph standing.

545 Physical Evaluation II P 1

The principles and methods of patient evaluation with emphasis on the dental and medical evaluation of the patient and treatment of medical emergencies.

Su Qtr. 1 cl. Prereq: Dent soph standing.

546 Oral and Physical Evaluation P 2

Interpretation of signs, symptoms, and laboratory studies; the detection and management of common extraoral and intraoral disease.

Au Qtr. 2 cl. Prereq: Dent soph standing.

547 Oral Radiology I P 1

The theory and operation of radiographic equipment; darkroom procedures; discussion of anatomical landmarks as seen radiographically; introduction of intraoral radiographic techniques. O'Brien.

Sp Qtr. 1 cl. Prereq: Dent soph standing.

548 Oral Radiology II P 1

Bisection of the angle and long cone techniques used in intraoral radiography; extraoral radiographic techniques. O'Brien.

Su Qtr. 1 cl. Prereq: Dent soph standing.

549 Oral Radiology III P 1

Interpretation of radiographic evidence of pathosis; hazards of ionizing radiation. O'Brien.

Au Qtr. 1 cl. Prereq: Dent soph standing.

551 Pedodontics I P 1

Orientation in pedodontics, patient management, and methods of prevention and control of dental caries. Bowers.

Sp Qtr. 1 cl. Prereq: Dent soph standing. Not open to students with credit for 451 or 551 prior to Su Qtr 1977.

552 Pedodontics II P 2

Orientation in pedodontics preparatory for clinical assignments; patient management, modified operative procedures in cavity preparation; pulp management, the manipulation of prefabricated materials and the methods of prevention and control of dental caries. Bowers.

Su Qtr. 1 cl, 3 lab hrs. Prereq: Dent soph standing. Not open to students with credit for 452 or 552 prior to Su Qtr 1977.

553 Pedodontics III P 2

Preparation of study casts; construction of orthodontic bands, using different materials and techniques, designing appliances for prevention, interception or correction of incipient malocclusion. Bowers.

Au Qtr. 1 cl, 3 lab hrs. Prereq: Dent soph standing. Not open to students with credit for 453 or 553 prior to Su Qtr 1977.

561 Periodontology II P 2

Periodontal pathology and clinical diagnosis including the microscopic, radiographic, and clinical study of all parts of the periodontium in health and disease. App.

Sp Qtr. 2 cl or 2 lab hrs. Prereq: Dent soph standing. Not open to students with credit for 461 or 561 prior to Su Qtr 1977.

563 Periodontology III P 2

Periodontal therapy including treatment available to the general practitioner to enable him to manage patients with periodontal disease. This will include sequence of treatment. App.

Au Qtr. 2 cl or 2 lab hrs. Prereq: Dent soph standing. Not open to students with credit for 463 or 563 prior to Su Qtr 1977.

567 Endodontics I P 1

Basic techniques and procedures used in the treatment of pulpless teeth.

Sp Qtr. 1 cl. Prereq: Dent soph standing. Not open to students with credit for 411 prior to Su Qtr 1977.

568 Endodontics II P 1

Laboratory experience in endodontics.

Su Qtr. 2 lab hrs for 5 wks. Prereq: Dent soph standing. Not open to students with credit for 413 prior to Su Qtr 1977.

569 Endodontics III P 1

The rationale and prognosis of endodontic procedures; application of treatment techniques peculiar to endodontics, including radiography, intracanal preparations and root fillings.

Au Qtr. 1 cl. Prereq: Dent soph standing. Not open to students with credit for 412 prior to Su Qtr 1977.

571 Pharmacology I P 1

General pharmacology including the origin and methods of development of drugs; basic pharmacy involving prescription writing, the metric and apothecary systems, drug standards, and federal drug legislation and regulation.

Sp Qtr. 1 cl. Prereq: Dent soph standing. Not open to students with credit for 572 prior to Su Qtr 1977.

572 Pharmacology II P 1

The pharmacology of drugs with possible applications to dentistry, including premedication, postmedications, and drugs affecting the autonomic nervous system.

Su Qtr. 1 cl. Prereq: Dent soph standing. Not open to students with credit for 573 or 572 prior to Su Qtr 1977.

579 Local Anesthesiology P 1

The theory, chemistry, and technics of local anesthesia for dental procedures.

Au Qtr. 1 cl. Prereq: Dent soph standing. Not open to students with credit for 403 prior to Su Qtr 1977.

582 Removable Complete Prosthodontics III

Prereq: Dent soph standing. Not open to students with credit for 482 prior to Su Qtr 1977.

582.01 Lecture P 1

The principles and practices of the construction of immediate dentures, and of making esthetic denture restorations. Brown.

Su Qtr. 1 cl. Not open to students with credit for 482.01 prior to Su Qtr 1977.

582.02 Laboratory P 1

Su Qtr. 3 lab hrs. Not open to students with credit for 482.02 prior to Su Qtr 1977.

583 Removable Complete Prosthodontics IV P 1

The principles and practices of impression making as related to the anatomic, histologic, and physiologic considerations. Porter.

Au Qtr. 1 cl. Prereq: Dent soph standing. Not open to students with credit for 483 or 583 prior to Su Qtr 1977.

584 Fixed Partial Prosthodontics I P 2

Principles and technical procedures; complete and partial crowns: preparation, fabrication, and casting in gold. Downes.

Sp Qtr. 1 cl, 3 lab hrs. Prereq: Dent soph standing. Not open to students with credit for 484 or 584 prior to Su Qtr 1977.

585 Fixed Partial Prosthodontics II P 3

Construction of fixed partial restorations utilizing basic types of retainers, fixed and semi-movable connectors, gold and acrylic pontics. Downes.

Su Qtr. 1 cl, 6 lab hrs. Prereq: Dent soph standing. Not open to students with credit for 485 or 585 prior to Su Qtr 1977.

586 Fixed Partial Prosthodontics III P 3

Construction of fixed partial restoration with basic retainers and connectors and glazed porcelain pontic; fabrication of acrylic jacket crown. Downes.

Au Qtr. 1 cl, 6 lab hrs. Prereq: Dent soph standing. Not open to students with credit for 486 or 586 prior to Su Qtr 1977.

587 Removable Partial Prosthodontics II

Prereq: Dent soph standing. Not open to students with credit for 487 prior to Su Qtr 1977.

587.01 Lecture P 1

The relation of the diagnostic aspects of removable partial dentures to their design and construction. Svensson.

Sp Qtr. 1 cl. Not open to students with credit for 487.01 prior to Su Qtr 1977.

587.02 Laboratory P 2

Sp Qtr. 6 lab hrs. Not open to students with credit for 487.02 prior to Su Qtr 1977.

589 Removable Partial Prosthodontics III P 1

The advanced principles and design of removable partial dentures and their clinical applications. Svensson.

Au Qtr. 1 cl. Prereq: Dent soph standing. Not open to students with credit for 489 prior to Su Qtr 1977.

593 Individual Studies P 1-6

Individual studies in any of the recognized fields of dentistry.

Su, Au, Wi, Sp Qtrs. Prereq: Dent fresh or soph standing. Repeatable.

601 Clinical Oral Surgery and Pain Control I P 2

Wi Qtr. 4 clinic hrs. Prereq: Dent jr standing. Not open to students with credit for 601 or 601.01 prior to Su Qtr 1977.

602 Clinical Oral Surgery and Pain Control II P 2

Sp Qtr. 4 clinic hrs. Prereq: Dent jr standing. Not open to students with credit for 601 or 601.02 prior to Su Qtr 1977.

603 Clinical Oral Surgery and Pain Control III P 2

Su Qtr. 4 clinic hrs. Prereq: Dent jr standing. Not open to students with credit for 602 or 602.01 prior to Su Qtr 1977.

604 Oral Surgery III P 1

Wound healing, inflammation, infection, their mechanism, diagnosis and treatment; surgical management of exostosis, hyperplasias and surgical preparation of the mouth for prosthodontics.

Wi Qtr. 1 cl. Prereq: Dent jr standing.

606 Oral Surgery IV P 1

Diagnosis and surgical treatment plan for unerupted teeth; incisions, methods for removal of bone, protection for adjacent teeth, hemostatic agents, antibiotics, sutures and suturing.

Su Qtr. 1 cl. Prereq: Dent jr standing. Not open to students with credit for 605 or 606 prior to Su Qtr 1977.

623 Community Dentistry IV P 1

An introduction to, philosophy of, equipment for, and problems encountered in the treatment of dental needs of the handicapped homebound patient. Lotz.

Su Qtr. 1 cl. Prereq: Dent jr standing. Not open to students with credit for 526 or 623 prior to Su Qtr 1977.

631 Operative Dentistry IV

Prereq: Dent jr standing. Not open to students with credit for 531 prior to Su Qtr 1977.

631.01 Lecture P 1

Clinical diagnosis of pulp disease; protection and conservative treatment of the vital pulp; factors influencing the success or failure of restorative materials in clinical practice. Beckwith.

Wi Qtr. 1 cl. Not open to students with credit for 531.01 prior to Su Qtr 1977.

631.02 Clinic P 3

Wi Qtr. 6 clinic hrs. Not open to students with credit for 531.02 prior to Su Qtr 1977.

632 Operative Dentistry V

Prereq: Dent jr standing. Not open to students with credit for 532 prior to Su Qtr 1977.

632.01 Lecture P 1

Detailed study of restorative materials; indications and contraindications for each; their manipulation and individual requirements in cavity preparation. Beckwith.

Sp Qtr. 1 cl. Not open to students with credit for 532.01 prior to Su Qtr 1977.

632.02 Clinic P 3

Sp Qtr. 6 clinic hrs. Not open to students with credit for 532.02 prior to Su Qtr 1977.

633 Clinical Operative Dentistry I P 3

Su Qtr. 6 clinic hrs. Prereq: Dent jr standing. Not open to students with credit for 533 or 633 prior to Su Qtr 1977.

651 Pedodontics IV P 1

Detailed study of materials presented in 552; restorative materials used in pedodontics; the use of X-Ray in pedodontic practice. Bowers.

Wi Qtr. 1 cl. Prereq: Dent jr standing. Not open to students with credit for 551 or 651 prior to Su Qtr 1977.

652 Clinical Pedodontics I P 1

Bowers.

Sp Qtr. 2 clinic hrs. Prereq: Dent jr standing. Not open to students with credit for 552 or 652 prior to Su Qtr 1977.

653 Clinical Pedodontics II P 1

A continuation of 652. Bowers.

Su Qtr. 2 clinic hrs. Prereq: Dent jr standing. Not open to students with credit for 553 or 653 prior to Su Qtr 1977.

654 Orthodontics I P 1

Diagnosis and treatment for the interception of orthodontic problems and beginning studies on development of occlusion.

Wi Qtr. 1 cl. Prereq: Dent jr standing. Not open to students with credit for 554 prior to Su Qtr 1977.

655 Orthodontics II P 1

Continuation of the study of the development of occlusion, studies on growth and development of the stomatognathic system and use of roentgenographic cephalograms in orthodontics.

Sp Qtr. 1 cl. Prereq: Dent jr standing. Not open to students with credit for 555 prior to Su Qtr 1977.

656 Orthodontics III P 1

Etiology, classification and treatment of dento-facial malformations, physiology of tooth movement and character of tissues involved.

Su Qtr. 1 cl. Prereq: Dent jr standing. Not open to students with credit for 556 prior to Su Qtr 1977.

661 Clinical Periodontology I P 1

Wi Qtr. 3 clinic hrs. Prereq: Dent jr standing. Not open to students with credit for 561 or 661 prior to Su Qtr 1977.

662 Clinical Periodontology II P 1

A continuation of 661. App.

Sp Qtr. 3 clinic hrs. Prereq: Dent jr standing. Not open to students with credit for 562 or 662 prior to Su Qtr 1977.

663 Clinical Periodontology III P 1

A continuation of 662. App.

Su Qtr. 3 clinic hrs. Prereq: Dent jr standing. Not open to students with credit for 563 or 663 prior to Su Qtr 1977.

668 Clinical Endodontics I P 1

Sp Qtr. 2 clinic hrs. Prereq: Dent jr standing. Not open to students with credit for 511 prior to Su Qtr 1977.

669 Clinical Endodontics II P 2

Su Qtr. 4 clinic hrs. Prereq: Dent jr standing. Not open to students with credit for 513 prior to Su Qtr 1977.

672 Pharmacology III P 1

The chemistry, indications, actions, and effects of antibiotics and analgesics.

Sp Qtr. 1 cl. Prereq: Dent jr standing.

681 Clinical Removable Prosthodontics I P 2

Wi Qtr. 4 clinic hrs. Prereq: Dent jr standing. Not open to students with credit for 581 or 681 prior to Su Qtr 1977.

682 Clinical Removable Prosthodontics II P 3

Sp Qtr. 6 clinic hrs. Prereq: Dent jr standing. Not open to students with credit for 582 or 682 prior to Su Qtr 1977.

683 Clinical Removable Prosthodontics III P 3

Su Qtr. 6 clinic hrs. Prereq: Dent jr standing. Not open to students with credit for 583 or 683 prior to Su Qtr 1977.

684 Fixed Partial Prosthodontics IV P 1

Veneer crowns, dowel and core, temporary coverage; diagnosis and treatment planning; electroplating; clinical applications and practice. Long.

Wi Qtr. 1 cl. Prereq: Dent jr standing. Not open to students with credit for 584 or 684 prior to Su Qtr 1977.

685 Fixed Partial Prosthodontics V

Prereq: Dent jr standing. Not open to students with credit for 585 prior to Su Qtr 1977.

685.01 Lecture P 1

Elastic impression materials and related technique including use of gypsum products, waxes, tissue retraction and sectioning methods, clinical application and practice.

Sp Qtr. 1 cl. Not open to students with credit for 585.01 prior to Su Qtr 1977.

685.02 Clinic P 1

Sp Qtr. 3 clinic hrs. Not open to students with credit for 585.02 prior to Su Qtr 1977.

686 Fixed Partial Prosthodontics VI

Prereq: Dent jr standing. Not open to students with credit for 586 prior to Su Qtr 1977.

686.01 Lecture P 1

Selection of abutments and retainers, connectors and pontics; additional types of bridgework procedures; clinical applications and procedures. Long.

Su Qtr. 1 cl. Not open to students with credit for 586.01 prior to Su Qtr 1977.

686.02 Clinic P 2

Su Qtr. 6 clinic hrs. Not open to students with credit for 586.02 prior to Su Qtr 1977.

689 Removable Partial Prosthodontics IV P 1

Complex problems of removable partial dentures and their clinical application. Svensson.

Su Qtr. 1 cl. Prereq: Dent jr standing. Not open to students with credit for 587 prior to Su Qtr 1977.

693 Individual Studies in Dentistry P G 1-6

Advanced studies in any of the recognized fields of dentistry.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Dent jr standing. Repeatable.

700 Special Problems P G 1-15

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Dent postgrad or grad standing. Repeatable.

700.01 Advanced Oral Surgery and Anesthesia

Diagnosis and treatment of surgical conditions of the teeth and contiguous structures; advanced techniques in surgery and local and general anesthesia.

700.02 Advanced Orthodontics

Applied osteology and myology in cephalometric roentgenographic interpretations; review of cephalic growth and development factors in normal occlusion; correction of malocclusions and dento-facial malformations. Williams.

700.03 Advanced Periodontics

Diagnosis and treatment of periodontal disease; correlation between the disease of the periodontium and probable systemic diseases, and management of diseases of a purely dental origin. App. Solt.

700.04 Advanced Prosthodontics

The diagnosis, treatment, and replacement of missing or lost teeth and parts of the mouth by prosthetic appliances; complete removable partial or fixed restorations. Porter and Long.

700.05 Advanced Oral Pathology and Diagnosis

The interrelationships of gross microscopic, and clinical pathology; current advances in the field of oral pathology and diagnosis. Cavalaris, Blozis.

700.06 Advanced Endodontics

The diagnosis of pulp and periapical diseases and their treatment by surgical and non-surgical techniques.

700.07 Advanced Pedodontics

Lectures, seminars and clinical practice encompassing all phases of pedodontics and interceptive orthodontics. Bowers.

700.08 Advanced Dental Materials

The science of dental materials. Zardiackas.

700.09 Advanced Oral Histology and Embryology

The principles of histology and embryology applied to the structures in the oral region — their development, morphology, functions, and clinical relationships. Melfi.

700.10 Advanced Operative Dentistry

Clinical problems in operative dentistry and their correlation with problems in related fields of dentistry; special emphasis on preventive dentistry.

701 Clinical Oral Surgery and Pain Control IV P 2

Au Qtr. 4 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 602, 602.02 prior to Su Qtr 1977.

704 Oral Surgery V P 1

A continuation of 606. Diagnosis, surgical treatment, and prognosis for pathologic conditions of the mouth and jaws, of the salivary glands and their ducts and biopsy for lesions.

Au Qtr. 1 cl. Prereq: Dent sr standing. Not open to students with credit for 606 prior to Su Qtr 1977.

708 Hospital Dentistry

Define the role of the hospital in the treatment of dental patients and provide experience in the hospital so the dentist can contribute to total patient care.

Su, Au, Wi, Sp Qtrs. 1 week. Prereq: Dent jr standing.

708.01 Lecture P G 1

Hospital dental practice, hospital staff organization, privileges, medical records, patient evaluation, operating room, emergency room protocol, in-patient orders and care.

Sp Qtr. 1 cl. Prereq: Dent jr standing.

708.02 Clinic: University Hospital P 1

In-patient and out-patient general anesthesia, operating room, emergency room, out-patient dentistry, clinics, hospital pathology service, medicine and surgery conferences, ward rounds, laboratory services, oral surgery rounds.

Su, Au, Wi, Sp Qtrs. 1 4-hr clinic. Prereq: 708.01.

708.03 Clinic: Children's Hospital P 1

Operating room, emergency room, out-patient dentistry, out-patient clinics, observation in general anesthesia, medical and surgical conferences, ward rounds, laboratory services.

Su, Au, Wi, Sp Qtrs. 1 4-hr clinic. Prereq: 708.01.

721 Community Dentistry V P 1

Dental practice administration: dental jurisprudence; ethics and legal aspects of the practice of dentistry. McCuen.

Au Qtr. 1 cl. Prereq: Dent sr standing. Not open to students with credit for 621 prior to Su Qtr 1977.

722 Community Dentistry VI P 1

Dental practice administration: dental economics, records, tax liability. McCuen.

Wi Qtr. 1 cl. Prereq: Dent sr standing. Not open to students with credit for 622 prior to Su Qtr 1977.

723 Community Dentistry VII P 1

Dental practice administration: the social aspects of the practice of dentistry. McCuen.

Sp Qtr. 1 cl. Prereq: Dent sr standing. Not open to students with credit for 623 prior to Su Qtr 1977.

731 Clinical Operative Dentistry II P 3

Review of the basic principles of operative dentistry and their clinical application to special problems.

Au Qtr. 6 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 631 prior to Su Qtr 1977.

732 Clinical Operative Dentistry III P 3

Introduction of special technical applications in operative dentistry and their clinical applications. Beckwith.

Wi Qtr. 6 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 632 prior to Su Qtr 1977.

733 Clinical Operative Dentistry IV P 3

A continuation of 732. Advanced theories, technical procedures, and materials in operative dentistry; their value, limitations, and clinical application. Beckwith.

Sp Qtr. 6 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 633 prior to Su Qtr 1977.

741 Oral Pathology II P G 1

Dental aspects of oncology including the oral surgical, periodontic, and prosthodontic management of patients with oral neoplastic disease and post-treatment morbidity. Cavalaris.

Au Qtr. 1 cl. Prereq: Dent sr standing. Not open to students with credit for 641 prior to Su Qtr 1977.

742 Oral Pathology III P G 1

Medical aspects of oncology including the diagnosis, treatment and prognosis of cancerous problems and discussion of recent advances in cancer research and etiology. Cavalaris.

Wi Qtr. 1 cl. Prereq: Dent sr standing. Not open to students with credit for 642 prior to Su Qtr 1977.

743 Oral Pathology IV P G 1

Clinico-pathologic conference pertaining chiefly to neoplastic disease, particularly in the head and neck regions. Cavalaris.

Sp Qtr. 1 cl. Prereq: Dent sr standing. Not open to students with credit for 643 prior to Su Qtr 1977.

745 Clinical Oral and Physical Evaluation I P 1

Blozis.

Wi Qtr. 2 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 645 prior to Su Qtr 1977.

746 Clinical Oral and Physical Evaluation II P 1

A continuation of 745. Blozis.

Sp Qtr. 2 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 646 prior to Su Qtr 1977.

747 Clinical Oral Radiology I P 1

O'Brien.

Au Qtr. 2 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 647 prior to Su Qtr 1977.

748 Clinical Oral Radiology II P 1

A continuation of 747. O'Brien.

Wi Qtr. 2 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 648 prior to Su Qtr 1977.

749 Clinical Oral Radiology III P 1

A continuation of 748. O'Brien.

Sp Qtr. 2 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 649 prior to Su Qtr 1977.

751 Clinical Pedodontics III P 2

Au Qtr. 4 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 651 prior to Su Qtr 1977.

752 Clinical Pedodontics IV P 2

Wi Qtr. 4 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 652 prior to Su Qtr 1977.

753 Clinical Pedodontics V P 1-3

An elective course in advanced clinical pedodontics with special emphasis on the developmentally disabled child. Bowers.

Sp Qtr. 2 clinic hrs. Prereq: Completion of clinical pedodontics sequence 651, 652, 653, 751, 752. Not open to students with credit for 653 prior to Su Qtr 1977.

761 Clinical Periodontology IV P 1

App.

Au Qtr. 2 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 661 prior to Su Qtr 1977.

762 Clinical Periodontology V P 1

A continuation of 761. App.

Wi Qtr. 2 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 662 prior to Su Qtr 1977.

763 Clinical Periodontology VI P 1

A continuation of 762. App.

Sp Qtr. 2 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 663 prior to Su Qtr 1977.

768 Clinical Endodontics III P 2

Wi Qtr. 4 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 612 prior to Su Qtr 1977.

769 Clinical Endodontics IV P 1

A continuation of 768.

Sp Qtr. 2 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 613 prior to Su Qtr 1977.

771 Pharmacology IV P 1

The chemistry of tranquilizers; indications for their use and their actions; a review of prescription writing.

Au Qtr. 1 cl. Prereq: Dent sr standing. Not open to students with credit for 673 prior to Su Qtr 1977.

778 General Anesthesiology P 1

Laryngoscopy, endotracheal intubation, maintenance and management during recovery; management of emergencies; use of fluids, drugs, open and closed cardiac massage techniques, and analeptics.

Wi Qtr. 1 cl. Prereq: Dent sr standing. Not open to students with credit for 603 prior to Su Qtr 1977.

781 Clinical Removable Prosthodontics IV P 3

Au Qtr. 6 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 681 prior to Su Qtr 1977.

782 Clinical Removable Prosthodontics V P 2

Porter.

Wi Qtr. 4 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 682 prior to Su Qtr 1977.

783 Clinical Removable Prosthodontics VI P 2

A continuation of 782. Porter.

Sp Qtr. 4 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 683 prior to Su Qtr 1977.

784 Clinical Fixed Partial Prosthodontics I P 2

Long.

Au Qtr. 4 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 684 prior to Su Qtr 1977.

785 Clinical Fixed Partial Prosthodontics II P 2

A continuation of 784. Long.

Wi Qtr. 4 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 685 or 785 prior to Su Qtr 1977.

786 Clinical Fixed Partial Prosthodontics III P 2

A continuation of 785. Long.

Sp Qtr. 4 clinic hrs. Prereq: Dent sr standing. Not open to students with credit for 686 or 786 prior to Su Qtr 1977.

790 Advanced Dental Topics or Problems P 1-3

Lectures and discussions of current topics, laboratory or clinical participation in problems or investigation related to dentistry. Presented by faculty, guest lecturers or clinicians.

Au, Wi, Sp Qtrs. Arr. Prereq: Dent sr standing. Repeatable to a maximum of 9 cr hrs. 1-3 cr hrs permitted during each qtr of sr yr.

790.01 Clinical Oral Surgery and Pain Control**790.04 Oral Surgery****790.11 Dental Materials****790.14 Oral Biology I****790.15 Oral Biology II****790.17 Occlusion I****790.18 Occlusion II****790.19 Occlusion III****790.21 Community Dentistry I****790.22 Community Dentistry II****790.23 Community Dentistry III****790.24 Community Dentistry IV****790.25 Community Dentistry V****790.31 Operative Dentistry****790.41 Oral Pathology****790.44 Oral and Physical Evaluation****790.47 Oral Radiology****790.51 Pedodontics I****790.52 Pedodontics II****790.53 Pedodontics III****790.54 Orthodontics****790.61 Periodontology I****790.62 Periodontology II****790.67 Endodontics****790.77 Anesthesiology****790.81 Removable Prosthodontics I****790.82 Removable Prosthodontics II****790.83 Removable Prosthodontics III****790.84 Fixed Prosthodontics****792 Special Lectures in Dentistry P G 3-5**

Lectures in special phases in dentistry.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable.

792.01 Oral Pathology

General principals and concepts of pathology associated with the oral cavity.

792.02 Oral Pathology

Local disturbances of the oral cavity.

792.03 Oral Pathology

Systemic disturbances and their oral manifestations.

792.04 Dental Radiology

Radiologic methods and diagnosis.

792.05 Oral Diagnosis

Examination and diagnosis of oral disease.

792.06 Dental Therapeutics

Principals of pharmacology in relation to patient care.

792.07 Physical Diagnosis

Physical evaluation of the dental patient and its correlation with the required treatment.

792.08 Dental Epidemiology

The principals of epidemiology in relation to dental health and disease.

792.12 Errors in Measurement P G 1

Discussion of distribution functions as applied to random errors and the propagation of error. Foreman.

Su Qtr. 1 cl. Prereq: College algebra or equiv. designed to acquaint MS candidates in dentistry with errors in physical research.

793 Individual Studies P G 3-5

Individual assignments in each specialty of dentistry; students will elect to work in desired subjects after a conference with the instructor in charge.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable.

793.01 Oral Surgery and Anesthesia**793.02 Orthodontics****793.03 Periodontics****793.04 Prosthodontics****793.05 Oral Pathology****793.06 Endodontics****793.07 Pedodontics****793.08 Operative Dentistry****793.09 Oral Diagnosis****793.10 Fixed Partial Prosthodontics****793.11 Oral Radiography****794 Group Studies P G 3-5**

Group studies on special problems in each specialty of dentistry.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable.

794.01 Oral Surgery and Anesthesia**794.02 Orthodontics****794.03 Periodontics****794.04 Prosthodontics****794.05 Oral Pathology****794.06 Endodontics****794.07 Pedodontics****794.08 Operative Dentistry****794.09 Oral Diagnosis****794.10 Fixed Partial Prosthodontics****794.11 Oral Radiography****795 Seminars in Dentistry P G 1-5**

Discussion of advances in dental science and review of original literature.

Su, Au, Wi, Sp Qtrs. 1-5 cl. Prereq: Dent grad standing.

795.01 Oral Surgery and Anesthesia**795.02 Orthodontics**

- 795.03 Periodontics
- 795.04 Prosthodontics
- 795.05 Oral Pathology
- 795.06 Endodontics
- 795.07 Pedodontics
- 795.08 Operative Dentistry
- 795.09 Oral Diagnosis
- 795.10 Fixed Partial Prosthodontics
- 795.11 Oral Radiography

796 Specialty Seminars in Dentistry P G 3-5

Seminars in each of the specialty areas of dentistry for discussion of pertinent literature, presentation, and discussion of research work, and demonstration of advanced techniques.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable.

- 796.01 Oral Surgery and Anesthesia
- 796.02 Orthodontics
- 796.03 Periodontics
- 796.04 Prosthodontics
- 796.05 Oral Pathology
- 796.06 Endodontics
- 796.07 Pedodontics
- 796.08 Operative Dentistry
- 796.09 Oral Diagnosis
- 796.10 Fixed Partial Prosthodontics
- 796.11 Oral Radiography

798 Advanced Clinical Practice in Dentistry P 3-10

Broad exposure to advanced principles and practices in each specialty of dentistry.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to maximum of 120 cr hrs.

- 798.01 Oral Surgery and Anesthesia
- 798.02 Orthodontics
- 798.03 Periodontics
- 798.04 Prosthodontics
- 798.05 Oral Pathology
- 798.06 Endodontics
- 798.07 Pedodontics
- 798.08 Operative Dentistry
- 798.09 Oral Diagnosis
- 798.10 Fixed Partial Prosthodontics
- 798.11 Oral Radiography

885 Histologic Laboratory Technique G 1-5

The preparation of oral and dental tissues for microscopic study. Melfi.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Not open to students with maximum allowable credit for 785 prior to Su Qtr 1977.

886 Research Methods in Dentistry G 3-5

A discussion on conceptual, methodological, and technical problems encountered in development of dental research projects.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Not open to students with maximum allowable credit for 786 prior to Su Qtr 1977. Repeatable.

894 Group Studies G 3-5

Advanced group studies in dentistry.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable.

993 Individual Studies G 3-5

Advanced individual studies in dentistry.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable.

999 Research in Dentistry G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

Developmental Biology

Office: 200 B Lazenby Hall, 1827 Neil Avenue Mall

Interdepartmental Seminar in Developmental Biology

See Biophysics, Botany, Genetics, Microbiology and Zoology 890.

999 Research in Developmental Biology G Arr

Research for thesis and dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Economics

Office: 239 Hagerty Hall, 1775 College Road, 422-6701

100 Introduction to Economics U 5

Study of economic concepts basic to a wide range of social problems; application of these principles to understanding economic activity in firms, households, and the economy.

Su, Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 200 or 201 or Agr Econ 100. Recommended as a foundation for further courses in economics.

200 Principles of Economics I U 5

Introduction to economic theory: supply and demand for goods and services; market structure; the distribution of income.

Su, Au, Wi, Sp Qtrs. 5 cl. H200 (honors) may be available to students enrolled in an honors program or by permission of dept. First required course for students planning to take 500 level courses in econ.

206 Current Economic Problems U 5

Examination of problems of current policy interest and importance; introduction to economic aspects of these problems and to alternative solutions.

Au, Wi, Sp Qtrs. 5 cl.

206.01 General Business Conditions

Examination of current problems; optimum levels of employment; conditions underlying consumer expenditures; savings, investments; inflation, deflation; agriculture, public works, housing; regional development.

Prereq: 100 or equiv. Not open to students with credit for 506.

206.02 Economics of the Ghetto

Interaction between economic problems and race problems in urban areas.

Prereq: 100 or equiv. Not open to students with credit for 490.

206.03 Environmental Studies

The application of economic analysis to the social and technological problems associated with energy production and use, pollution of the environment, and the economy.

Prereq: 100 or equiv and Chem 101 or equiv.

206.04 Economic Aspects of Education

Analysis of education as consumption and as investment; financing and production of education; manpower; teachers' salaries; education and economic growth.

Prereq: 100 or equiv.

206.05 Urban Economic Problems

Urban spatial structure; problems of transportation, housing, crime, urban renewal and sprawl; intracity location of economic activity and government organization.

Prereq: 100 or equiv and Geog 240 or equiv. Not open to students with credit for 692.

294 Group Studies U 5

Current problems not covered in other courses; application of economic analysis of scarcity and choice of current policy significance.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 100 or 201 or equiv. Repeatable to a maximum of 10 cr hrs.

400 Principles of Economics II U 5

Continuation of 200; theory of national income determination; economic fluctuations; money; government policy; international economics.

Su, Au, Wi, Sp Qtrs. 5 cl. H400 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 200 or permission of instructor. Not open to students with credit for 402.

442 Elementary Economic Statistics U 5

Descriptive statistics, discrete probability, Bayes law, random variables, sampling distributions.

Au, Wi, Sp Qtrs. 3 cl, 2 1-hr labs. Prereq: 10 cr hrs in math above the level of 101.

500 Evolution of Economic Thought U G 5

Critical analysis of ideas of great economists, factors which influenced those ideas; their impact upon social and economic development of the modern world. Michael.

Sp Qtr. 4 cl. Prereq: 400 or equiv.

501 Intermediate Micro-Economic Theory U G 5

Theory of consumer behavior; theory of the firm; costs and production; factor price determination; general equilibrium.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 400 or equiv.

502 Intermediate Macro-Economic Theory U G 5

Analysis of the determinants of national output, income and employment levels; theory of economic growth and progressive equilibrium in an economy.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 400 or equiv; 501 recommended.

508 Comparative Economic Systems U G 5

Principles and institutions for economic decision making under capitalism, socialism, communism, and "mixed" systems; comparison of selected countries. Eason.

Su Qtr. 4 cl. Prereq: 400 or equiv. Not open to students with credit for 690.

512 General Economic History U G 5

Evolving institutional changes fundamental to

Western development; analysis of the rise of nation-state, commercial and industrial development, and evolution of a market economy. Baack and Sandberg.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 400 or equiv.

520 Money and Banking U G 5

Organization, operation, and economic significance of our monetary and banking system are discussed with special reference to current conditions and problems.

Su, Au, Wi, Sp Qtrs. 4 cl. H520 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 400 or equiv. Not open to grad students in econ.

530 Government Finance in the American Economy U G 5

Analysis of fiscal institutions and decision making in the public sector of the American economy; budget planning and execution; taxation, debt, fiscal policy.

Su, Au, Wi, Sp Qtrs. 4 cl. H530 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 400 or equiv. Not open to grad students in econ.

532 Public Expenditure and Cost-Benefit Analysis U G 5

Economics of public choice, public goods, non-market allocations, collective decision-making, and net-benefit maximization; case studies.

Au Qtr. 4 cl. Prereq: 400 or equiv. Not open to students with credit for 632.

550 Economic Development U G 5

Empirical and theoretical consideration of long-term economic changes, including changes in industrial structure, technology, and level of national product; emphasis on developing economics. Michael, Kelley, and Singh.

Au Qtr. 4 cl. Prereq: 400 or equiv. Not open to students with credit for 610 or 650.

553 Population U G 5

Techniques of population analysis; the demographic transition and economic theories of population; impact of population change both in the Third World and in industrialized nations. Eason.

Sp Qtrs. 4 cl. Prereq: 400 or equiv.

558 Area Studies in Economic Development U G 5

Regional analysis of economic conditions; measurement and interpretation of economic growth; national development strategies and resource utilization; inter-regional cooperation and international economic relations.

Wi, Sp Qtrs. 4 cl. Prereq: 400 or equiv.

558.01 Latin America

Not open to students with credit for 558.

558.02 East Asia**558.03 The Middle East****558.04 The Soviet Union and Eastern Europe**

Not open to students with credit for 559.

560 International Economic Relations U G 5

Survey of international economic relations; the basis of world trade; commercial and financial policy, particularly of the United States; and recent international economic organization. Michael and Wopf.

Wi, Sp Qtrs. 4 cl. Prereq: 400 or equiv. Not recommended for students who plan to take 665 and 666.

570 Government and Business U G 5

Economic and legal aspects of government regulation of business in the United States; philosophies and concepts of public control; contemporary problems. Marvel and Tybout.

Su, Au, Sp Qtrs. 4 cl. Prereq: 400 or equiv.

576† Transportation Economics U G 5

Study of general economic characteristics and government regulation of rail, motor, water, air, and pipeline carriers; consideration of competitive relations between modes of transportation.

Wi Qtr. 4 cl. Prereq: 400 or equiv. Not open to students with credit for 676.

580 Labor Economics and Industrial Relations U G 5

Survey of the field of labor economics; trade unionism, collective bargaining; wage determination, employment, unemployment; labor legislation.

Su, Au, Wi, Sp Qtrs. 4 cl. H580 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 400 or equiv. Not open to grad students in econ.

581 Economics of the Labor Market U G 5

Materials and methods of labor market analysis; the measurement and behavior of unemployment, employers' and employees' labor market behavior; wage determination and labor allocation. Parnes.

Sp Qtr. 4 cl. Prereq: 580 or equiv.

591 Economics of Environmental Quality U G 5

Economic analysis of the relationships among natural resources, growth, pollution control, congestion, and social institutions.

Wi Qtr. 4 cl. Prereq: 400 or equiv. Offered in cooperation with Natural Resources.

H596 Honors Seminar in Economics U 2 or 3

Presentations by selected faculty of economic topics and issues of current interest; discussion of research problems and methods.

Wi Qtr. 1 2-hr cl. Prereq: Honors program enrollment or permission of instructor.

H599 Honors Course U 1-15

Program of readings, conferences, and reports arranged for the student who is a candidate for a degree *with distinction* in economics.

Su, Au, Wi, Sp Qtrs. Open only to students enrolled in the Honors Program of the Colleges of the Arts and Sciences or the College of Administrative Science. Repeatable to a maximum of 15 cr hrs; must be taken for at least 2 qtrs.

600 Applications of Mathematics in Economic Analysis U G 5

Coverage of the most common applications of mathematics to economic analysis and econometrics; the necessary tools from matrix algebra and calculus are provided.

Au, Wi, Sp Qtrs. 5 cl. Prereq: Math 152 or equiv and permission of instructor.

613 Economic History of the United States U G 5

General survey from discovery of America to present; European economic background; westward movement and its effects; development of economic institutions in the United States. Baack.

Wi Qtr. 4 cl. Prereq: 501 and 502, or grad standing.

614 Economic History of Western Europe U G 5

Survey from 1750 through the post-World War II period; coverage will go from Britain in the West to Russia in the East. Sandburg.

Au Qtr. 4 cl. Prereq: 501 and 502, or grad standing. Not open to students with credit for 512.

625 National and International Money Markets U G 5

Organization, functions, and control of money markets and their submarkets; flow of funds in these markets and investment policies of market participants. Baltensperger and Quantius.

Au Qtr. 4 cl. Prereq: 501 and 520.

631 Federal Finance and Fiscal Policy U G 5

The economics of government spending and taxation; analysis of the fiscal role and instruments of government and their effects on the economy. Lynn.

Au Qtr. 4 cl. Prereq: 10 cr hrs in econ at the 500 level, or grad standing. Not open to students with credit for 630.

633 State and Local Government Finance U G 5

Economic analysis of revenues and expenditures of state and local governments; vertical and horizontal relationships between agencies and units; specific problems in these areas. Stocker.

Sp Qtr. 4 cl. Prereq: 10 cr hrs in econ at the 500 level, or grad standing.

640 Probability and Statistical Decision Theory U G 5

Theory of probability and stochastic processes; statistical inference, tests of significance and analysis of variance; statistical decision theory. Cunyningham, L'Esperance, and Reimer.

Su, Wi Qtrs. 4 cl. Prereq: 400 and 442 or equiv.

641 Applied Regression and Correlation Analysis U G 5

The general linear regression model; multiple correlation, path analysis, analysis of variance and tests of significance; specification errors. Cunyningham and L'Esperance.

Sp Qtr. 4 cl. Prereq: 400 and 442 or equiv. Not open to students with credit for 641.01.

645† Linear Programming and Economic Analysis U G 4

Techniques of linear programming and input-output analysis applied to economic problems of allocation and valuation within the firm and the economy.

Wi Qtr. 4 cl. Prereq: 501 and 600.

650 Economic Development: Issues and Policies U G 5

Historical and stage theories of underdevelopment; sources and patterns of growth and development; problems of demography, unbalanced growth, agriculture, and industry; foreign trade and regional development.

Au Qtr. 4 cl. Prereq: Grad standing or permission of instructor. Not open to students with credit for 652.

665 International Commodity Flows: Theory and Policy U G 5

Comparative advantage and the gains from trade; tariffs and other trade restrictions; economic effects of protective policies; U.S. commercial policies; regional economic integration.

Wi Qtr. 4 cl. Prereq: 10 cr hrs in econ at the 500 level, or grad standing.

**666 Financial Aspects
of International Trade U G 5**

International payments and receipts; foreign exchange markets; balance-of-payments adjustment under different monetary systems; macro-economic policy; international monetary reforms; foreign investments; multi-national corporations.

Sp Qtr. 4 cl. Prereq: 10 cr hrs in econ at the 500 level, or grad standing.

670 Structure of Industry U G 5

Nature, role, and regulation of competition; market structure and social performance; antitrust laws; current economic, legal, and policy problems in the antitrust area. Parsons.

Wi Qtr. 4 cl. Prereq: 501 or grad standing.

671 Economics of Energy U G 5

Economic analysis of energy resources, demand, and economic growth, with special reference to pricing, industry structure and public policy. Tybout.

Sp Qtr. 2 2-hr cl. Prereq: 400 or equiv.

**683 Unions and Collective
Bargaining U G 5**

Development of unionism in the United States; structure and government of contemporary labor organizations; collective bargaining; settlement of labor-management disputes. Parnes.

Au Qtr. 4 cl. Prereq: 580 or grad standing.

684 Labor and Government U G 5

Public policy with respect to labor problems and industrial relations; role of legislative, judicial, and executive branches of state and federal government.

Wi Qtr. 4 cl. Prereq: 580 or grad standing.

693 Individual Studies U G 1-5

Advanced readings in economics and related fields. Juniors registered for 693 must have an average of B or better in all econ courses, and a cumulative point-hour ratio of 3.0 or better.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

694 Group Studies U G 3-5

Advanced courses in economics and related fields. Au, Wi, Sp Qtrs. Each decimal subdivision repeatable to a maximum of 15 cr hrs.

**694.01 Economic Theory and Mathematical
Economics****694.02 Econometrics****694.03 Money, Banking, and Monetary Policy****694.04 Labor Economics****694.05 Structure and Regulation of Industry****694.06 Government Finance and Expenditure****694.07 Urban Economics****694.08 Transportation Economics****694.09 Economic Development and Development
Planning****694.10 Soviet and Eastern European Economy****694.11 International Economics****694.12 Economic History****695 Economics of National Security U G 4**

Analysis of economic problems arising from defense and war; emphasis on implication of defense and war economy and on economic theory and institutions. Sherman.

Au Qtr. 4 cl. Prereq: 10 cr hrs in econ at the 500 level, or grad standing. Not open to students with credit for 679.

**Alternative Futures and Resource
Management**

See Nat Res 702. Offered in cooperation with Economics.

Introduction to National Security

See NSP Stud 702.

705 Micro-Economic Theory Survey U G 4

Theory of consumer behavior; theory of the firm; costs and production; factor price determination; general equilibrium.

Au Qtr. 4 cl. Prereq: Grad standing or permission of instructor. Not open to students with credit for 501.

**706 Macro-Economic Theory
Survey U G 4**

Analysis of the determinants of the national output; income and employment levels; theory of economic growth and progressive equilibrium in an economy.

Wi Qtr. 4 cl. H706 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: Grad standing or permission of instructor. Not open to students with credit for 502.

717 Economics of Socialism U G 5

Survey of socialist thought and movements; relations of socialist thought to the theory and practice of socialist economics; planning, allocation, pricing, and controls.

Au Qtr. 4 cl. Prereq: 501 and 502, or 705 and 706, or grad standing. Not open to students with credit for 607.

**718 Economic Analysis of the Soviet Union
and Eastern Europe U G 5**

Analysis of the pattern of economic growth and theory, and practice of economic planning in the Soviet Union and Eastern Europe; comparison with Communist China.

Sp Qtr. 4 cl. Prereq: 501 and 502, or 705 and 706, or grad standing. Not open to students with credit for 608.

730 Public Finance U G 5

Comprehensive survey and analysis of the principal fiscal activities of contemporary governments; logic of public sector activity, taxation principles and practice, intergovernmental relations, current fiscal problems. Lynn and Stocker.

Wi Qtr. 4 cl. Prereq: Grad standing and 705, or permission of instructor. Not open to students with credit for 530.

**740 Inference and Decision Analysis
under Uncertainty U G 5**

Distribution theory, point and interval estimation, statistical hypothesis testing, decision analysis under uncertainty.

Wi Qtr. 4 cl. Prereq: 694.02 or equiv.

**741 General Linear Regression
Analysis U G 5**

Multiple regression analysis; the general linear model; non-linear and distributed lag models.

Sp Qtr. 4 cl. Prereq: 600 and 740, or Stat 521. Not open to students with credit for 641.02.

742 Econometrics U G 5

Review of the general linear model; identification; estimating criteria; single and simultaneous equation estimation; econometric application. Cunyngnam, L'Esperance, Lichstein, and Rhodes.

Au Qtr. 4 cl. Prereq: 741.

770† Transportation Investment and Pricing U G 5

Economic analysis of alternative transportation systems; relation of pricing policy to economic efficiency and other social goals; applications to problems of urban and regional transportation. Sp Qtr. 4 cl. Prereq: 705 and grad standing, or permission of instructor.

H783 Honors Course U 3-5

A program of study arranged for each student, with individual conferences, reports, and honors thesis. Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the econ courses taken and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degree BA *with distinction* in econ. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 or hrs.

Research Principles and Techniques in Leadership and Public Policy

See NSP Stud 785.

790 Urban Economics U G 5

Application of economic theory to urban problems; topics include slums, residential segregation, intracity location of economic activity, urban renewal, urban sprawl, transportation, and governmental organization.

Sp Qtr. 4 cl. Prereq: 705, Geog 650 and grad standing, or permission of instructor. Not open to students with credit for 692.

800† Research Methods in Economics G 5

Methods of economic research, choice of research topics, and presentation and evaluation of results obtained. Cunningham.

Au Qtr.

Seminar on Social Science Relationships to Public Policy

See NSP Stud 801.

802† History of Economic Thought G 5

A survey of economic thought with emphasis on the period from Adam Smith to the present. Lynn.

Sp Qtr.

804 Price Theory G 5

Applied price theory; pricing of factors of production, distribution theory, consumption theory; pricing of final products, production theory, theory of profits.

Au, Wi Qtrs. Prereq: 705 or equiv.

805 Micro-Economic Theory G 5

Nature of economic analysis; theory of demand, costs, and prices; factor price determination and functional income distribution; competition, oligopoly, monopoly, and monopsony.

Su, Au, Wi, Sp Qtrs. Prereq: 600 and 804.

806 Macro-Economic Theory G 5

Theory of income and employment; Keynesian aggregate supply and demand; consumption, saving, and the multiplier; determinants of investment and the accelerator; government's role.

Au, Wi, Sp Qtrs. Prereq: 600 and 706 or equiv.

808 Advanced Micro-Economic Theory G 5

Koizumi.

Sp Qtr. Prereq: 600, 805, and 806.

809 Advanced Macro-Economic Theory G 5

Baltensperger and Brito.

Wi Qtr. Prereq: 600, 805, and 806.

815 Mathematical Economics I G 5

Mathematical analysis of micro-economic problems including consumer and production theory and general equilibrium. Koizumi.

Au Qtr. Prereq: 808.

816 Mathematical Economics II G 5

Mathematical analysis of macro-economic problems including static and dynamic systems and optimal control. Brito.

Wi Qtr. Prereq: 809.

820 Monetary Theory G 5

Role of money in theoretical analysis of forces determining and influencing level of income, employment, and prices. Dewald and Kane.

Su, Wi Qtrs. Prereq: 520, 805, and 806 or equiv.

821 Bank Structure and Regulation G 5

Relation of bank regulation and supervision to composition of banking industry; impact of differing banking structures on economic growth and stability; proposals for structural changes. Baltensperger.

Sp Qtr. Prereq: 520, 805, and 806 or equiv.

830 Advanced Public Finance G 5

A theoretical and empirical investigation of the economic behavior of the public sector; theory of social goods, problems of tax structure, incidence, multi-unit finance. Oakland.

Au Qtr. Prereq: 805.

831 Legal and Economic Problems in Taxation G 3

Legal, economic, and administrative problems in taxation. Lynn.

Sp Qtr.

832 Advanced Public Finance II G 5

Continuation of 830; topics include intergovernmental relations, tax incidence and tax reform. Oakland.

Wi Qtr. Prereq: 830.

842 Advanced Econometrics G 5

Theory and application of advanced quantitative research methods; computerized application of econometric methods developed in 742.

Cunningham, L'Esperance, and Rhodes.

Wi Qtr. Prereq: 742.

843 General Business Conditions Analysis G 3

Theoretical and applied analysis of general economic conditions and their relation to decisions of the firm. Craig, and L'Esperance.

Au, Wi, Sp Qtrs. Prereq: 400 or equiv and differential and integral calculus.

844 Managerial Economics G 3

MBA core course in micro-economics; production and consumer theory, market forms, welfare, distribution, general equilibrium, and capital theory.

Au, Wi, Sp Qtr. 2 1½-hr cl. Prereq: 200 or equiv, and differential and integral calculus.

850 Advanced Economic Development G 5

Survey of theoretical models and methods used in economic development and planning; theories of dualistic and demographic development; inter-industry and sector models.
Wi Qtr. Prereq: 650, 705, and 706.

861 Advanced Micro-Economic Trade Theory G 5

Advanced nonmonetary international trade theory; analysis of the effect of trade and commercial policies on the allocation of resources, income distribution, and growth. Ray.
Au Qtr. 4 cl. Prereq: 805.

862 Advanced Macro-Economic Trade Theory G 5

Advanced monetary international trade theory; analysis of payments adjustments under alternative international monetary institutions. Ray.
Wi Qtr. Prereq: 805 and 806; 861 recommended.

872 Industrial Organization G 5

Economic analysis of industry structure, conduct, performance, and related issues of public policy. Parsons and Tybout.
Sp Qtr. Prereq: 670 and 805.

884 Advanced Economics of the Labor Market G 5

Economic theory and empirical evidence relating to labor allocation and wage determination. Fleisher and Parsons.
Sp Qtr. Prereq: 805 and 806.

894 Group Studies G 3-5

Advanced courses in economics and related fields. Au, Wi, Sp Qtrs. Each decimal subdivision repeatable to a maximum of 15 cr hrs.

894.01 Economic Theory and Mathematical Economics**894.02 Econometrics****894.03 Money, Banking, and Monetary Policy****894.04 Labor Economics****894.05 Structure and Regulation of Industry****894.06 Government Finance and Expenditure****894.07 Urban Economics****894.08 Transportation Economics****894.09 Economic Development and Development Planning****894.10 Soviet and Eastern European Economy****894.11 International Economics****894.12 Economic History****899 Interdepartmental Seminars G 1-5**
See Interdepartmental Seminars.**900 Seminar in Teaching Methods G 5**

Seminar in teaching methods and contents of undergraduate courses in economics for students pursuing the Doctor of Arts degree.

Au, Wi, Sp Qtrs. Prereq: 805 and 806. Open only to departmental teaching associates. Repeatable to a maximum of 25 cr hrs.

901 Supervised Teaching in Economics G 5

Supervised teaching of undergraduate courses in economics for students pursuing the Doctor of Arts degree.

Au, Wi, Sp Qtrs. Prereq: 900 and permission of instructor. Repeatable to a maximum of 15 cr hrs.

911 Seminar in Economic History, American and European G 5

Selected research topics in economic history. Sandberg.

Sp Qtr. Prereq: 613 and 614 or equiv or permission of instructor. Repeatable to a maximum of 10 cr hrs.

915 Seminar in Price Theory G 5

Special topics in economic theory. Koizumi.

Su, Wi Qtrs. Prereq: 808 and 809. Repeatable to a maximum of 10 cr hrs.

918 Seminar in Economic Problems of the Soviet Union and Eastern Europe G 5

Selected research topics. Eason.

Au Qtr. Prereq: 717 and 718. Repeatable to a maximum of 10 cr hrs.

920 Seminar in Monetary Policy G 5

Application of monetary theory to issues of public policy in banking and monetary affairs; examination of public hearings and policy literature. Baltensperger, Dewald, and Kane.

Sp Qtr. Prereq: 820 and 821. Repeatable to a maximum of 10 cr hrs.

930 Seminar in Government Finance G 5

Analysis of theoretical and applied aspects of fiscal economics in the American and foreign economies; selected topics of current and permanent importance. Koizumi and Oakland.

Wi Qtr. Prereq: 631 and 632. Repeatable to a maximum of 10 cr hrs.

940 Seminar in Econometrics G 5

Examination of economic problems whose solutions may advantageously be sought by use of the methods of mathematics and mathematical statistics. Cunningham and L'Esperance.

Sp Qtr. Prereq: 742 and 842 or equiv or permission of instructor. Repeatable to a maximum of 10 cr hrs.

950 Seminar in Economic Development and Planning G 5

Selected topics in the process of economic development and in planning for development; analysis and evaluation of planning methodologies, strategies, and systems. Kelley, Michael, and Singh.

Sp Qtr. Prereq: 652 and 850, or permission of instructor. Repeatable to a maximum of 10 cr hrs.

960 Seminar in International Economic Problems G 5

Seminar in analytical problems, theoretical and applied, of international economic adjustments; development of techniques for implementation of policies. Ray.

Su Qtr. Prereq: 861. Repeatable to a maximum of 10 cr hrs.

970 Seminar in Structure and Regulation of Industry G 5

Economic bases for government participation in business activities: antitrust, regulation, and collective decision making.

Wi Qtr. Prereq: 872. Repeatable to a maximum of 10 cr hrs.

980† Seminar in Industrial Relations G 5

Selected topics and issues in contemporary trade unionism and collective bargaining.

Wi Qtr. Prereq: 683 or equiv or permission of instructor. Repeatable to a maximum of 10 cr hrs.

981 Seminar in the Economics of the Labor Market G 5

Selected topics and issues in wage determination, employment and unemployment. Kelley, Fleisher, and Parnes.

Sp Qtr. Prereq: 882. Repeatable to a maximum of 10 cr hrs.

991 Problems in National Security Economics G 4

Seminar designed to analyze in depth selected economic problems of national defense and defense-related activities. Sherman.

Wi Qtr. Prereq: 695 or equiv or permission of instructor. Repeatable to a maximum of 8 cr hrs.

995 Research Seminars G 3-5

Intensive study of problems in the graduate fields of specialization.

Su, Au, Wi, Sp Qtrs. Prereq: 75 hrs of grad credit; completion of core courses in decimal subdivision or permission of seminar director. Each decimal subdivision repeatable to a maximum of 30 cr hrs.

995.01 Economic Theory and Mathematical Economics**995.02 Econometrics****995.03 Money, Banking, and Monetary Policy****995.04 Labor Economics****995.05 Structure and Regulation of Industry****995.06 Government Finance and Expenditure****995.07 Urban Economics****995.08 Transportation Economics****995.09 Economic Development and Development Planning****995.10 Soviet and Eastern European Economy****995.11 International Economics****995.12 Economic History****998 Research in Economics: Thesis G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

999 Research in Economics: Dissertation G Arr

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Education

Office: 118 Arps Hall, 1945 North High Street, 422-5790

494 Group Studies U 1-5

Group studies on special problems in education.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

692 Workshop U G 1-8

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Su Qtr. Arr. Prereq: Written permission of instructor. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs.

694 Group Studies U G 1-5

Group studies on special problems in education.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

894 Group Studies G 1-5

Group Studies on special problems in education.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

Educational Administration

Office: 301 Ramseyer Hall, 29 West Woodruff Avenue, 422-2574

601 Roles, Rights, and Responsibilities in Public Education U G 3

A study of organizational, professional and legal roles, rights and responsibilities in public education; development of broad understanding of environment in which teachers work. Larmee, Nystrand, and Staub.

Au, Sp Qtrs. 3 cl.

690 Practicum in Problems of Public Education U G 3

Open to experienced teachers and administrators; groups are organized around specific problems; requests must be received by faculty chairman in time to allow for planning.

3 cl. Prereq: Ed-C&F 435; Ed-E&MC 461, or equiv, and permission of instructor. Repeatable to a maximum of 9 cr hrs.

692 Workshops U G 1-8

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Su Qtr. Cl hrs arr. Prereq: Teaching experience, and written permission of workshop instructor.

Repeatable with not more than 4 workshops to a maximum of 12 cr hrs.

692.35 Higher Education**692.44 Educational Administration****693 Individual Studies U G 1-4**

Su, Au, Wi, Sp Qtrs. Prereq: Ed-C&F 435 or Ed-E&MC 460, and permission of instructor. Repeatable to a maximum of 30 cr hrs for undergrads and 45 cr hrs for grad students.

693.35 Higher Education**693.44 Educational Administration****694 Group Studies U G 1-5**

Group studies on special problems in education.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

694.35 Higher Education**694.44 Educational Administration****800 Administration of Higher Education G 3**

Purposes and scope of higher education; governance; problems of administration-student-staff relationships; and administrative organization. Ecker and Moore.

Su, Au, Wi, Sp Qtrs. 2 1½-hr cl. Not open to students with credit for 940.

815 The Community College G 3

History of community colleges; evaluation of organization and administration; campus planning; and federal, state, and local governmental relations with these colleges. Moore.

Au, Sp Qtrs. 2 1½-hr cl. Not open to students with credit for 935.

816 Curriculum and Instruction in the Community College G 3

Review of sociological technological changes affecting higher education; analysis of curriculum, instruction, counseling, and community services; and summary of characteristics of students and faculty. Moore.

Su, Wi Qtrs. 2 1½-hr cl. Not open to students with credit for 936.

820 Financing Higher Education G 3

A study of financing higher education with emphasis on issues affecting higher education; criteria for identifying and developing sources of financial support for institutions of higher education. Hack.

Wi Qtr. 1 2½-hr cl or 2 1½-hr cl. Prereq: 800 or 815 or 935 or 940.

830 Personnel Administration in Higher Education G 3

A study of the staff personnel function in institutions of higher education through a consideration of personnel policies and operating principles. Larmee.

Sp Qtr. 1 2½-hr cl or 2 1½-hr cl. Prereq: 800 or 815 or 935 or 940.

840 Legal Aspects of Higher Education Administration G 3

Statutory and case law are analyzed for administrative implications. Stressed, too, are college and university governance patterns changing because of legal developments. Staub.

Su Qtr. Arr. Prereq: 800 or 815 or 935 or 940.

842 Administration of Academic Affairs in Higher Education G 3

Principles and problems of administering academic affairs in light of development, financial considerations, and evaluation. Ecker and Moore.

Au, Sp Qtrs. 2 1½-hr cl. Prereq: 800 or 940. Not open to students with credit for 942.

846 Introduction to Educational Administration G 3

Introduction to the organizational setting of the school, the nature of administration, and organizational theory. Hack, Larmee, Blanke, and Nystrand.

Su, Au, Wi, Sp Qtrs. Prereq: Ed-E&MC 585 or Secondary (587) student teaching, or equiv. Not open to students with credit for 946.

847 Human Relations in Educational Administration G 3

Interpersonal behavior in educational organizations with emphasis on such topics as goal-setting, decision-making, communicating, conflict management, and evaluation. Anderson, Nystrand, Blanke, Spillman, and Wagstaff.

Su, Au, Wi, Sp Qtrs. Prereq: 800 or 846 or 940 or 946. Not open to students with credit for 947.

848 The Principalship G 3

Comprehensive examination of school building management focusing on the role, tasks, and responsibilities associated with the principalship.

Su, Au, Sp Qtrs. 1 2½-hr cl. Prereq: 846 or permission of instructor. Not open to students with credit for 948 or 949.

849 Administrative Behaviors in the Principalship G 3

Focus upon the skills requisite to effective functioning as a building and school administrator.

Su, Au, Wi Qtrs. 1 2½-hr cl. Prereq: 848 or equiv with permission of instructor.

884 Planned Field Experience G 3 or 6

Planned professional administrative experience in a public school or other educational agency under supervision.

Repeatable to a maximum of 18 cr hrs with 6 cr hrs maximum in one qtr.

884.35 Higher Education

Prereq: 693.35 and permission of area adviser.

884.44 Educational Administration

Prereq: 693.44 and permission of area adviser.

899 Interdepartmental Seminar G 1-5

See Interdepartmental Seminars.

925 Seminars G 2-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times. Research problems in:

925.35 Higher Education**925.44 Educational Administration****950 Problems of Beginning Superintendents G 3**

Definition of the superintendent's role, and the roles of the board of education, school staff, and community; examination of problems indigenous to conflict among roles. Larmee, Blanke, and Hack.

Su, Wi Qtrs. 1 2½-hr cl. Prereq: 846 or 946.

951 Administrative Problems of the City School System G 3

A study of problems of educational administration in the complex city school system with emphasis on solution of educational problems caused by the unique demographic characteristics of the city. Cunningham, Moore, Spillman, and Blanke.

Au, Sp Qtrs. 1 3-hr cl. Prereq: 846 or 946.

952 Legal Aspects of School Administration G 3

A study of statutory and case law, legal principles and provisions relevant to educational administration, particularly in the areas of personnel, finance, curriculum, contracts, property, liability, and organization. Staub.

Su, Au, Sp Qtrs. 1 2½-hr cl. Prereq: 846 or 946, or equiv.

953 School Community Relations G 3

Principles and practice in developing and maintaining appropriate school community relationships; opinion analysis; communication processes; decision-making patterns. Nystrand, Staub, and Cunningham.

Su, Wi Qtrs. 1 2½-hr cl. Prereq: 846 or 946 or equiv.

955 Staff Personnel Administration G 3

Study of personnel administration in educational institutions; theory, principles and practices as they relate to personnel policy, recruitment, selection, orientation, appraisal, in-service education, promotion, collective negotiations, general welfare. Larmee.

Su, Au, Sp Qtrs. Prereq: 846 or 946.

956 School Finance G 3

Examination of the theory and economics of financing public education; emphasis on sources of revenue, variations in ability and effort, state-local plans, and the federal role. Hack.

Su, Au Qtrs. 1 3-hr cl. Prereq: 846 or 946.

957 Business Administration of Schools G 3

Function and role of business administrators in schools; emphasis on budgeting; payroll and accounting; purchasing; planning, constructing, operating, and maintaining the school plant. Hack. Su, Wi Qtrs. 1 3-hr cl. Prereq: 846 or 946.

958 Educational Facility Planning G 3

Problems and techniques in determining educational facility needs, evaluating facilities, planning for new construction and remodeling, utilizing specialized personnel; related legal and financial aspects. Conrad and Wohlers.

Au Qtr. 1 2-hr cl. Prereq: 846 or 946, or equiv.

959 Doctoral Core in Educational Administration I G 4

Analysis of significant research in educational administration.

Au Qtr. 1 cl, lab arr. Prereq: 846 or 946, master's degree, 2 yrs teaching experience or equiv, and permission of instructor.

960 Doctoral Core in Educational Administration II G 4

Advanced study of administrative problems and organizational behavior from an interdisciplinary perspective.

Wi Qtr. 1 cl, lab arr. Prereq: 959.

961 Doctoral Core in Educational Administration III G 4

Continuation of 960.

Sp Qtr. 1 cl, lab arr. Prereq: 960.

999 Research G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

999.35 Higher Education

999.44 Educational Administration

Education: Curriculum and Foundations

Office: 121 Ramseyer Hall, 29 West Woodruff Avenue, 422-5181

108† Introduction to the Study of Education U 3

An introductory study of cultural factors that affect education, with students helped to understanding through an examination of their own lives.

3 cl.

435 Theory and Practice in Secondary Education U 5

A laboratory field experience course introducing concepts, problems, and skills common to prospective secondary school teachers.

Su, Au, Wi, Sp Qtrs. 4 2-hr cl. Prereq: Psych 230; students in phys ed: Phys Ed 232 or equiv.

640 Foundations of Education I U G 3

Su, Au, Wi, Sp Qtrs. Prereq: 3rd yr standing.

640.71 Social Criticism in American Education

An analysis of the major critical stances taken in the history of American education. Mehl.

1 2½-hr cl. Not open to students with credit for 636.

640.72 History of Modern Education

Education and schools as factors in the development of the modern world: theories,

practice, relations with other social institutions and forces, especially in Europe and America. Sutton.

3 cl. Not open to students with credit for 632.

640.73 Introduction to Philosophy of Education

Application of the methods and techniques of philosophical analysis to educational problems. Pratte, Reagan, and Smith.

3 cl. Not open to students with credit for 637.

640.74 Introduction to Sociology of Education

An application of sociological theories, methods, and data to the analysis of educational practices and problems. Wittig.

3 cl.

641 Foundations of Education II U G 3

Su, Au, Wi, Sp Qtrs.

641.71 People, Politics, and Schools

An analysis of the political forces and ideological positions in American life since the Civil War and their effects on American education. Mehl.

1 2½-hr cl. Prereq: 3rd yr standing.

641.72 Education in Earlier Times

Schools and educational ideals in ancient and medieval societies; education before the rise of modern nation states; influence on contemporary practice and thinking. Sutton.

3 cl. Prereq: 3rd yr standing. Not open to students with credit for 632.

641.74 Advanced Sociology of Education

Continuation of 640.74.

3 cl. Prereq: 3rd yr standing and 640.74.

641.75 Logic in Teaching

Study of the logical aspects of teaching; includes attention to definitions, arguments, explanations, questions, and value judgments. Reagan.

2 1½-hr cl. Prereq: 640.73, and 4th yr standing.

641.76 Educational Theory

To assist teachers in securing perspective with reference to the various movements and practices that are embodied in contemporary theories of education. Pratte.

3 cl. Prereq: 640.71 or 640.72 or 640.73, and 4th yr standing.

641.77 Comparative Education

Social and cultural factors influencing the differential development of educational institutions and organization. Sutton and Matthews.

1 2½-hr cl. Prereq: 640.71 or 640.72 or 640.73, and 4th yr standing. Not open to students with credit for 723.

642 Foundations of Education III U G 3

Wi, Sp Qtrs. 3 cl.

642.72 Special Topics in History of Education

Develops and examines a selected topic in history of education.

Prereq: 640.71 or 640.72, and permission of instructor.

642.73 Special Topics in Philosophy of Education

Develops and examines a selected topic in philosophy of education; among possible topics are ethics and education; aesthetics and education; and existentialism and education.

Prereq: 640.73, and permission of instructor.

675 Audiovisual Materials of Instruction U G 4

The contribution of audiovisual materials to educational objectives emphasizing the classroom use of such materials, utilization practices, basic sources of information, selection, and evaluation of film and records.

Su, Au, Wi, Sp Qtrs. 2 cl, 2 2-hr lab. Prereq: 4th yr standing.

677 Radio and Television in Education U G 3

The varied types of educational broadcasting in relation to objectives, planning, production, utilization, and evaluation. Belland.

Su, Au Qtrs. 2 2-hr cl. Prereq: 4th yr standing.

678 Design of Educational Media Systems Components U G 2

Design, development, and production of instructional materials components for specific existing educational media subsystems in educational agencies.

Wi, Sp Qtrs. 2-qtr sequence; Wi 1 2-hr cl; Sp 1 cl, 1 2-hr lab; credit given on completion of 4 cr hrs. Must enroll to a maximum of 4 cr hrs. Prereq: 675 or equiv, and permission of instructor.

683 Problems of Teachers U G 3

Difficult problems of teachers are presented in the context of a simulation; emphasis is on improving problem solving, value clarification, and theory application; see 684 also. Cruickshank.

Su Qtr. 1 3-hr cl. Prereq: Student teaching or permission of instructor.

684 Problems of Teachers in the Inner-City School U G 3

In format and purpose, very much like 683; the problems presented, however, are those reported to be felt most frequently and severely by inner-city teachers. Cruickshank.

Su Qtr. 1 3-hr cl. Prereq: Student teaching or permission of instructor.

692 Workshops U G 1-8

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Su Qtr. Arr. Prereq: Teaching experience, and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs.

692.43 Modern Media and Materials**692.49 Curriculum and Instruction****693 Individual Studies U G 1-4**

A total of not more than 30 cr hrs of individual study (any 693) will apply toward graduation for undergrad students, or 45 cr hrs for grad students.

Su, Au, Wi, Sp Qtrs. Prereq: 435 or Ed-E&MC 460, and written permission of instructor.

693.36 Teacher Education and Instruction**693.40 History of Education and Cooperative Education****693.41 Philosophy of Education****693.43 Radio and Television Education****693.46 Audiovisual Materials of Instruction****693.49 Curriculum and Supervision****693.50 Higher Education****694 Group Studies U G 1-5**

Group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

694.36 Teacher Education and Instruction**694.40 History of Education and Comparative Education****694.41 Philosophy of Education****694.43 Radio and Television Education****694.46 Audiovisual Materials of Instruction****694.49 Curriculum and Supervision****694.50 Higher Education****698 Study Tour of Foreign Schools and Culture U G 5-15**

Five weeks intensive study of educational and cultural topics fundamental to central purpose of tour, then equal period of supervised observation of schools and related cultural factors in one or more foreign countries; specific emphases of separate tours to be announced.

Su Qtr. Prereq: Written permission of instructor.

Repeatable to a maximum of 25 cr hrs when different areas or topics are studied. Not open to students with maximum allowable credit for 689.

700 Interprofessional Education U G 3

Focus on ethical issues, changing professional/consumer rights, and interprofessional cooperation.

Repeatable to a maximum of 6 cr hrs; subdivisions not repeatable.

700.01 Care of Patient/Client

Treatment of the whole person through the analysis of the interrelated problems of actual patients/clients.

Wi Qtr.

700.02 Changing Societal Values

Identification and clarification of values considerations as they relate to professional problems in dealing with consumer/clients/patients.

Au Qtr.

722 The School in American Culture U G 3

An orientation to the contemporary American school by direct observation correlated with study of major historical forces affecting education. Sutton.

Au Qtr. 1 cl, 1 3-hr lab. Field trips arr. Prereq: One or more courses from 640 series, or equiv. Open only to new international students.

724 Historical and Cultural Factors in Evolution of Educational Systems U G 3

Social and historical factors affecting stability and effectiveness of educational institutions and organizations in countries where programs of universal education are of recent origin. Sutton.

Sp Qtr. 1 2½-hr cl. Prereq: One or more courses from 640 series or equiv.

801 Modern Trends in Educational Philosophy G 3

A study of contemporary work in philosophy of education and applications of that work to educational practice. Reagan and Pratte.

Su, Au, Wi Qtrs. 1 2½-hr cl. Not open to students with credit for 913.

802* Comparative Philosophy of Education G 3

A study of alternative philosophical views of selected educational practices and policy questions. Reagan.

Wi Qtr. 1 2½-hr cl. Prereq: 801 or equiv. Not open to students with credit for 917.

803 Social Philosophies and Education G 3

A study of social philosophies in terms of their significance for educational procedures and programs. Pratte.

Su, Wi Qtrs. 1 2½-hr cl. Prereq: 801 or equiv. Not open to students with credit for 915.

804 Ethical Problems in Education G 3

A philosophical study of ethical concepts found in educational arguments; special attention is given to their use in the formation of educational theory.

Su, Au Qtrs. 1 2½-hr cl. Prereq: 801 or equiv. Not open to students with credit for 914.

806 Fundamentals of Instructional Materials and Media G 3

Theory in educational media applied to the process of instructional development. Belland.

Su, Sp Qtrs. 1 3-hr cl. Prereq: 675, or practical experience in using educational media in school settings. Not open to students with credit for 676.

811 Sources of Progressive Thought in American Education G 3

An examination of the ideas that underlie progressive education; special attention is given to the men who developed these ideas along with the times in which they lived. Smith.

Su, Au, Wi, Sp Qtrs. 1 3-hr cl.

815 Historical Bases of Curriculum Development G 3

Intensive analysis of the outstanding contributions made by scholars in the field from 1900 to 1960. Frymier, Galloway, Klohr.

Wi Qtr. Prereq: 860.

822 Simulation and Gaming in Education G 3

Intended to familiarize participants with the potential of simulations and games as instructional methodologies for pre- and in-service education. Cruickshank.

Sp Qtr. 1 3-hr cl.

825 Theories and Educational Practices of Nonverbal Communication G 3

Investigation of theoretical and practical consequences of nonverbal communication for teaching and learning; exploration of research possibilities. Galloway.

Su, Au Qtrs. 1 2½-hr cl.

841 Curriculum in Higher Education G 3

A study of representative and experimental college programs in the United States. Severino.

Su, Au Qtrs. 1 2½-hr cl. Not open to students with credit for 941.

857 Individualizing Instruction G 3

A study of theory, practice, and materials related to individualizing instruction. Frymier and Belland.

Su, Au, Sp Qtrs. 1 2½-hr cl.

859 Junior High School Curriculum G 3

A study of various types of junior high school programs, with special emphasis upon teaching-learning procedures as they apply to the early adolescent years. Alberty.

Su, Wi Qtrs. 1 2½-hr cl. Prereq: 435 or equiv.

860 Fundamentals of Curriculum G 3

Designed to serve as an overview of the field of curriculum and instruction; kindergarten through 12th grade. Klohr and Alberty.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl. Not open to students with credit for 868.

861 Fundamentals of Supervision G 3

Supervision of instruction emphasizing general principles and practices in elementary and secondary schools. Frymier and Galloway.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl.

862 Role of the School in the Social Order G 3

An orientation for teachers and administrators which deals with the basic purposes of secondary education in relation to major issues and current trends. Alberty and Frymier.

Su, Au, Wi Qtrs. 1 2½-hr cl. Prereq: Ed-E&MC 585 or secondary (587) student teaching, or equiv.

863 Evaluation in Secondary Schools G 3

Study of techniques of evaluation in secondary schools; attention is given to current evaluation practices with emphasis on procedures appropriate to Ohio schools. Duncan.

Su, Au, Sp Qtrs. 1 2½-hr cl. Prereq: Ed-E&MC 585 or secondary (587) student teaching, or equiv.

864 Fundamentals of Instruction G 3

Survey of instructional theory and related behavioral science disciplines; emphasis is on application of principles of instructional theory to classroom teaching. Duncan and Hough.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl. Prereq: Ed-E&MC 585 or secondary (587) student teaching, or equiv.

865 Curriculum Theory G 3

Advanced study of curriculum; kindergarten through the 12th grade. Klohr.

Su, Wi Qtrs. 2 1½-hr cl. Prereq: 860, or equiv.

866 Supervision Theory G 3

Advanced study of supervision of instruction; kindergarten through the 12th grade. Galloway.

Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: 861, or equiv.

867 Educational Experimentation G 2-5

Analysis of contribution of selected experiments to elementary, secondary, and higher education; design of experimental method for attacking educational problems. Duncan.

Wi Qtr. 1 2-hr lab, conf arr. Prereq: Ed-Devel 785 or equiv, and 15 cr hrs of grad work in ed. Repeatable to a maximum of 5 cr hrs.

868 Laboratory in Curriculum Development in Secondary Schools G 3

Advanced study of techniques of curriculum development and organization; specific problems in curriculum development which are of concern to the students enrolled. Alberty and Klohr.

Su, Sp Qtrs. 1 2½-hr cl. Prereq: 862, or equiv.

869 Instructional Theory G 3

Advanced study dealing with theoretical conceptions, basic principles, and generalized techniques involved in developing, executing, and evaluating instructional activities. Hough.

Au Qtr. 1 2½-hr cl. Prereq: 862 and 864.

870 Practicum in Curriculum, Instruction, and Supervision G 3

A study of the literature and methods of curriculum, instruction, and supervision in a field setting, with emphasis on instruction.

Au Qtr. 1 cl, lab arr. Prereq: Master's degree and 861. Not open to students with credit for 868.

871 Practicum in Curriculum, Instruction, and Supervision G 3

A study of the literature and methods of curriculum, instruction, and supervision in a field setting, with emphasis on supervision.

Wi Qtr. 1 cl, lab arr. Prereq: Master's degree, 860 or 861 or 864.

872 Practicum in Curriculum, Instruction, and Supervision G 3

A study of the literature and methods of curriculum, instruction, and supervision in a field setting, with emphasis on curriculum.

Sp Qtr. 1 cl, lab arr. Prereq: Master's degree, 860 or 861, or equiv.

873 Problems of Secondary School Supervision and Curriculum Development G 3

Supervision and curriculum development emphasizing problems involved in initiating and conducting change in the secondary school curriculum. Frymier.

Sp Qtr. 1 2½-hr cl. Prereq: 860. Not open to students with credit for 868.

884 Planned Field Experience G 3-15

Planned professional teaching experience in a public school or other educational agency under supervision.

Prereq: Written permission of area advisor. Repeatable to a maximum of 15 cr hrs.

884.36 Teacher Education and Instruction**884.40 History of Education and Comparative Education****884.41 Philosophy of Education****884.43 Radio and Television Education****884.46 Audiovisual Communication****884.49 Curriculum and Instruction****884.50 Higher Education****889 Practicum in Educational Communication G 3-5**

Observation, limited participation and functional analysis of production, distribution, and management operations in selected media centers, and broadcast facilities or film agencies. Belland.

Wi, Sp Qtrs. 2 cl, 3-9 hrs arr. Repeatable to a maximum of 10 cr hrs.

901 Epistemology and Education G 3

A study of selected epistemological problems related to educational theory and practice. Reagan.

Su Qtr. 1 2½-hr cl. Prereq: 801 or equiv. Not open to students with credit for 912.

902 Educational Philosophy of John Dewey G 3

A systematic study of the writings of John Dewey in their bearings upon educational theory and practice. Pratte.

Sp Qtr. 1 2½-hr cl. Prereq: 801 or equiv. Not open to students with credit for 916.

903 Conceptions of Mind in Education G 3

A philosophical study of psychological concepts used to describe mental phenomena. Special attention is given to their use in the formation of educational theory. Smith.

Su, Sp Qtrs. 1 2½-hr cl. Prereq: 801 or equiv. Not open to students with credit for 911.

923 Developing the Curriculum in Teacher Education G 4

To acquaint prospective teachers of teachers with processes for curriculum development in teacher education; to permit them to develop a curriculum for the preparation of teachers. Cruickshank.

Su Qtr. 1 2-hr cl, 1 2-hr lab. Open only to PhD students.

925 Seminars G 2-5

Prereq: Written permission of instructor. Students

with permission of advisers may register for more than one section of 925 or for the same section two or more times.

Research problems in:

925.36 Teacher Education and Instruction

Cruickshank.

Su, Au, Wi, Sp Qtrs.

925.40 History of Education and Comparative Education

Mehl and Sutton.

Su, Au, Wi, Sp Qtrs.

925.41 Philosophy of Education

Pratte, Reagan, and Smith.

Su, Au, Wi Qtrs.

925.43 Radio and Television Education

Belland.

Su, Au, Wi Qtrs.

925.46 Audiovisual Communication

Belland.

Su, Wi, Sp Qtrs.

925.49 Curriculum and Supervision

Duncan, Frymier, Klohr, Galloway, Alberty and Hough.

Su, Au, Wi, Sp Qtrs.

925.50 Higher Education

Severino.

Su, Au, Wi, Sp Qtrs.

927 History of the Universities G 3

The university as an institution through 10 centuries; patterns of development in different countries; German, English, American contributions to the idea of the American university. Sutton.

Su, Wi Qtrs. 2 1½-hr cl.

928 History of Educational Thought: Ancient and Medieval G 3

Study and analysis of the major educational theories of the ancient and medieval periods including the educational writings of Plato, Aristotle, and St. Augustine. Mehl.

Su, Au Qtrs. 1 2½-hr cl. Prereq: 640.72 or 640.71.

929 History of Educational Thought: Modern G 3

Study of the major educational theories since 1500 including Montaigne, Milton, Locke, and Rousseau and their influence on contemporary educational theory and practice. Mehl.

Sp Qtr. 1 2½-hr cl. Prereq: 640.72 or 640.71.

937 Direct Experiences in Teacher Education G 3

An analysis of student teaching and related direct experiences in teacher education with special emphasis on the theoretical basis, purposes, organization, curriculum patterns, evaluation, administration, and problems in the design of experiences.

Su Qtr. 3 cl. Prereq: Master's degree, college supervision of student teachers, or permission of instructor.

944 Curriculum and Instruction in Teacher Education G 6

Bases and development of curriculum and instruction in teacher education; comparative study of programs for the preparation of teachers; analysis of the implications of research. Cruickshank.

Au Qtr. 2 3-hr cl. Prereq: 860, or written permission of instructor.

999 Research G Arr

Research for thesis or dissertation purposes only.
Su, Au, Wi, Sp Qtrs. Refer to decimal subdivisions
under 925.

Educational Development

Office: 216 Ramseyer Hall, 29 West Woodruff Avenue,
422-4872

494 Group Studies U 1-5

Group studies for students in specialized programs.
Prereq: Written permission of instructor. Repeatable
to a maximum of 15 cr hrs.

494.48 Educational Development**494.50 Educational Change****541† Empirical Methods in Educational
Development U 3**

A study of empirical methods as they apply in
educational research, development, and evaluation
settings.

Au, Wi, Sp Qtrs. 1 2-hr cl, 1 2-hr lab. Prereq:
Permission of instructor. Repeatable to a maximum of
9 cr hrs.

544† Seminar in Empirical Methods U 3

Seminar in empirical methods in educational
research, development, and evaluation; emphasis on
application of techniques to educational problems.
Au, Wi, Sp Qtrs. 1 2-hr cl, 1 hr arr. Repeatable to a
maximum of 9 cr hrs.

610 Alternative Schooling U G 3

A study of the educational and developmental
dynamics of the "alternative schools movement" as
an agent of change; to inquire further regarding
educational reforms and options. Buchanan.
Su, Au, Wi, Sp Qtrs. 1 3-hr cl.

**615 Developing Discipline for
Effective Learning U G 3-5**

Causes of and procedures for dealing with school
discipline problems; focus upon the teacher, student,
classroom and school situations.

Su, Au Qtrs. 1 2½-hr cl, arranged practicum. Prereq:
teaching experience or enrolled in student teaching.

**630 Developing Evaluation Methods
for Improving Classroom
Instruction U G 4**

With emphasis on developing practical strategies, the
objective of this course is to help teachers develop
skills for evaluating and improving their own teaching.
Bargar.

Su, Wi Qtrs. 1 3-hr practicum and 1 2-hr lab. Open to
pre-service and in-service teachers or instructors.

**680† Advanced Seminar in Empirical
Methods U G 1**

Discussion of advanced methodological concepts as
they apply to educational research, development, and
evaluation. Bargar.

Au, Wi Qtrs. 1 2-hr cl every other wk. Prereq: 541, 544,
or permission of instructor. Repeatable to a maximum
of 2 cr hrs.

**690 Practicum in Problems of Public
Education U G 3**

Open to experienced teachers and administrators;
groups are organized around specific problems;
requests must be received by faculty chairman in time
to allow for planning.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Ed-C&F 435, Ed-E&MC
461, or equiv and permission of instructor. Repeatable
to a maximum of 9 cr hrs.

692 Workshops U G 1-8

Intensive study of a problem common to the
participants for the purpose of developing sound
principles and practices relating to it.

Su Qtr. Cl hrs arr. Prereq: Teaching experience, and
written permission of workshop director. Repeatable
with not more than 4 workshops to a maximum of 12 cr
hrs.

693 Individual Studies U G 1-4

A total of not more than 30 cr hrs of individual study
(any 693) will apply toward graduation for undergrad
students, or 45 cr hrs for grad students.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Ed-C&F 435,
Ed-E&MC 460, and permission of instructor.

694 Group Studies U G 1-5

Group studies on special problems in education.

Prereq: Permission of instructor. Repeatable to a
maximum of 20 cr hrs.

694.48 Educational Development**694.50 Educational Change****723 Individual Development in
Educational Change U G 3**

Developmental processes of individuals are examined
and related to processes of educational development,
with special attention given to the nature of self-
development, interpersonal communications and
creative behavior.

Au Qtr. 1 3-hr cl.

**724 Development of Organizations and
Organizational Groups U G 3**

Dynamics of organizations and organizational
groups; functions of communication, planning and
evaluation; development of innovative structures or
practices.

Wi Qtr. 1 3-hr cl. Prereq: 4th yr or grad standing.

**725 Development of Education and Societal
Change U G 3**

Examination of developmental processes of
educational institutions and programs in context of
modernization and social change; attention given to
policy planning and institutional development
strategies for improving the effectiveness of
education.

Sp Qtr. 1 3-hr cl.

726 Educational Change U G 3 or 5

Commonly used strategies for changing people and
organizations are studied. The strategies vary from
collaborative problem solving to the coercive use of
violence and non-violence. Blanke.

Su, Wi Qtrs. 1 3-hr cl.

750 Program/Project Management U G 3

The use of management information systems in the
planning and controlling of educational research and
development projects, with particular emphasis on
network planning techniques. Cook.

Su, Au Qtrs. 1 3-hr cl. Prereq: 788.

760* Management of Educational Research and Development U G 3

An examination of the theory, practice and problems associated with the administration and management of research and development in educational systems and institutions. Cook.

Sp Qtr, offered in even-numbered yrs. 1 3-hr cl. Prereq: Bus-Mgt 701 for undergrads; Bus-Mgt 708 for grad students.

765 Frameworks for Program and Project Evaluation U G 4

The concepts and literature of educational program and project evaluation. Major topic: history of evaluation; frameworks, strategies, and current issues in educational program and project evaluation. Lange.

4 cl. Prereq: 785, 786, or equiv. Not open to students with credit for 965.

769 Quantitative Techniques for Educational Decisions U G 3

Principles and problems associated with utilization of quantitative techniques and procedures for educational decision making. Lange.

Wi Qtr. 1 3-hr cl. Prereq: 786 and 788. Not open to students with credit for 969.

784 Internship in Educational Development U G 3-12

Internship experiences in research, development, or evaluation settings.

Au, Wi, Sp Qtrs. Arr. Prereq: 541 and 544, or permission of instructor. Repeatable to a maximum of 12 cr hrs.

785 Introduction to Inquiry, Principles, Strategies, and Techniques U G 3

Introduction to inquiry strategies and their role in educational development; emphasis is on the conceptualization of educational problems.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: Permission of instructor.

786 Introduction to Inquiry: Quantitative Methods U G 3

An introduction to quantitative techniques, with emphasis on application in educational settings.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 785 or equiv, or permission of instructor.

787 Classroom Test Construction U G 3

General principles and techniques for construction and utilization of classroom tests for assessment of student achievement. Cook and Novak.

Su, Wi Qtrs. 1 3-hr cl. Prereq: 4th yr or grad standing.

788 Systems Concept in Education U G 3 or 5

Introduction to general systems theory and an overview of its utilization and application in the field of education.

Au Qtr. 2 2-hr cl. Prereq: 4th yr or grad standing.

789 Population Analysis and Educational Planning U G 3

A seminar designed to study population trends, movements, and distributions as they relate to more effective planning for school systems. Wayson.

Su, Wi Qtrs. 1 3-hr cl. Prereq: 785 or equiv, and Soc 751 or 754. Repeatable to a maximum of 6 cr hrs.

790 Problems and Processes in School Desegregation U G 3

A seminar designed to study major problems related to school desegregation and processes of solving those problems. Wayson.

Au, Sp Qtrs. 1 3-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs.

795 Proposal Development U G 3

Principles, processes and research relating to the creation of proposals for developmental and research activities in educational agencies and institutions.

Au Qtr. 1 2½-hr cl. Prereq: 785 or equiv.

800 Qualitative Research in Education G 3

Issues and problems of scientific inquiry in educational research with emphasis on field research.

Au, Sp Qtrs. 1 3-hr cl.

807 Educational Survey Research Methods G 3

A study of the design principles, sampling and data-gathering methods used in the conduct of educational survey research. Novak.

Sp Qtr. Two 1½-hr cl. Prereq: 785 and 786 or equiv with written permission of instructor.

808 Experimental Design in Education I G 3

An examination of logical and quantitative principles, especially the analysis of variance, underlying basic experimental designs employed in educational research. Kennedy and Lange.

Su, Wi Qtrs. 2 1½-hr cl. Prereq: 786, or equiv.

809 Experimental Design in Education II G 3

An examination of intermediate quantitative principles underlying experimental design in education, such as repeated measures designs, hierarchical designs, and the analysis of covariance. Kennedy and Lange.

Au, Sp Qtrs. 2 1½-hr cl. Prereq: 808, or equiv.

884 Planned Field Experience G 3-15

Planned professional teaching experience in a public school or other educational agency under supervision.

Prereq: Written permission of area advisor. Repeatable to a maximum of 15 cr hrs.

884.48 Educational Development

884.50 Educational Change

894 Group Studies G 1-5

Advanced group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

894.48 Educational Development

894.50 Educational Change

899 Interdepartmental Seminar G 1-5

See Interdepartmental Seminars.

925 Seminars G 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Students with permission of advisers may register for more than one section of 925, or for the same section two or more times.

925.48 Educational Development

925.50 Educational Change

**966 Research Process: Practicum
in Educational Research G 3**

The utilization of research strategies in the pursuit of educational problems, with emphasis upon the development, conduct, and completion of individual projects.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Previous courses in the basic sequence in educational research methodology, or permission of instructor.

999 Research G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Education: Early and Middle Childhood

Office: 202 Arps Hall, 1945 North High Street, 422-1257

289 Field Experience U 1-5

Professional service with children or youth in some school or community agency.

Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

289.02 Experience in a Community Agency**289.70 Early Childhood Education****294 Group Studies U 1-5**

Group studies for students in specialized programs.

Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

294.10 Elementary Education**294.56 Reading****294.70 Early Childhood Education****460 Elementary Education:
Child Guidance U 4**

To develop an understanding of child growth and development principles in relation to instruction.

Au, Wi, Sp Qtrs. Lab arr. Prereq: Psych 230; concur 461. Lab time is spent in observation-participation in an elementary school classroom.

**461 Elementary Education:
Conceptions of Teaching U 3**

Designed to acquaint students with certain aspects of elementary school programs which cut across separate subject areas, and to acquaint students with certain teaching behaviors.

Au, Wi, Sp Qtrs. Prereq or concur: 460. The lab for 460 also serves 461. Students who enroll only in 461 because of previous credit for 460 will be assigned to an elementary classroom for observation and participation at the same time as the 460 lab.

**467 Introduction to Children's
Literature U 3**

Study of literature for children with emphasis on standards for selecting materials with reference to the interests, needs, and abilities at different age levels.

Au, Wi, Sp Qtrs. Prereq or concur: 461.

**501 Kindergarten and Preschool
Teaching U 3**

Recent development in the education of young children and its influence on the selection and guidance of appropriate activities.

Au, Wi, Sp Qtrs. Prereq: 460; permission of instructor required for home economics majors.

**502 Elementary Education:
Mathematics U 3**

A study of the methods and materials used in arithmetic instruction; includes development of functional relationships with other curriculum areas, diagnostic procedures, and remedial work.

Au, Wi, Sp Qtrs. Prereq: 461; Math 105 and 106.

**507 Elementary Education:
The Language Arts U 3**

Consideration given to the teaching of language arts, including listening, oral, and written communications.

Au, Wi, Sp Qtrs. Prereq: 461.

**508 Elementary Education:
The Social Studies U 4**

Sequential arrangement of the elementary education curriculum. Particular emphasis is placed on social studies in the elementary school program.

Au, Wi, Sp Qtrs. Lab arr. Prereq: 461; concur 513 should be scheduled on the same day of the week and at consecutive am and pm hours just prior to student teaching. Lab time is spent in participation in an elementary school. Students may not schedule more than 20 cr hrs while taking this course.

511 Elementary Education: Science U 4

Consideration is given to the role of science in childhood education and to the study of content, methods, materials, and equipment appropriate for this program.

Au, Wi, Sp Qtrs. Lab arr. Prereq: 461, and 15 cr hrs of science. The University Basic Education Requirement in science may be used.

513 Elementary Education: Reading U 4

A study of various methods and materials used in the teaching of reading in the elementary school today.

Au, Wi, Sp Qtrs. Lab arr. Prereq: 461; concur 508 should be scheduled on the same day of the week and at consecutive am and pm hours just prior to student teaching. Lab time is spent in participation in an elementary school. Students may not schedule more than 20 cr hrs while taking this course.

**585 Elementary Education
Student Teaching**

Observation, participation, and responsible teaching in a public school in the greater Columbus area; individual and group conferences or seminars. Maximum transfer credit accepted is 6 cr hrs.

Au, Wi, Sp Qtrs. For additional information, see College of Education bulletin.

**585.10 Standard Elementary
Student Teaching U 9 or 15**

Prereq: Ed 4th yr standing and enrollment in regular elementary education degree program. 15 cr hrs required.

585.11 In-Service Student Teaching U 6 or 9

Prereq: 3 or more yrs of successful teaching experience.

**585.12 Postdegree Elementary
Student Teaching U 15**

Prereq: Bachelor's degree.

**585.14 Elementary Student Teaching
for Field-Based Programs U 3-15**

Students participate in teaching functions and assume major classroom responsibilities on a gradual basis from the beginning of the program.

Prereq: Enrollment in one of the approved Ed-E&MC field-based programs. Repeatable to the required 15 cr hrs.

H599 Honors Course U 3-5

A program of accelerated study for students with special aptitudes.
Su, Au, Wi, Sp Qtrs. Prereq: Enrollment in the Honors Achievement Program and permission of instructor. Repeatable to a maximum of 15 cr hrs.

665 Applied Linguistics for Teachers of Reading/Language Arts U G 3

Structure of language, language acquisition and language variation applied to language arts/reading principles, methods and materials. DeStefano.
Su, Au, Wi Qtrs. Two 1½-hr cl.

674 Family Participation in Early Childhood School Programs U G 3

Focuses upon the purposes and importance of family involvement in early childhood school programs, types of programs, resources, methods, and curricula. Sp Qtr. Prereq: Ed-Votec 673, or permission of instructor.

690 Practicum in Problems of Public Education U G 3

Open to experienced teachers and administrators; groups are organized around specific problems; requests must be received by department chairman in time to allow for planning.
3 cl. Prereq: 461 or equiv, Ed-C&F 435, and permission of instructor. Repeatable to a maximum of 9 cr hrs.

692 Workshops U G 1-8

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.
Su Qtr. Cl hrs arr. Prereq: Teaching experience, and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs.

692.10 Elementary Education

692.56 Reading

692.70 Early Childhood Education

693 Individual Studies U G 1-4

Su, Au, Wi, Sp Qtrs. Prereq: 460 or Ed-C&F 435, and permission of instructor. A total of not more than 30 cr hrs of individual study (any 693) will apply toward graduation for undergrad students, or 45 cr hrs for grad students.

693.10 Elementary Education

693.56 Reading

693.70 Early Childhood Education

694 Group Studies U G 1-5

Group studies on special problems in education. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

694.10 Elementary Education

694.56 Reading

694.70 Early Childhood Education

698 Study Tour of Foreign Elementary Schools and Culture U 5-15

Seminar will be conducted to study the educational and cultural purpose of tour, then supervised observation of schools and related cultural factors in one or more foreign countries will be completed. Prereq: Written permission of instructor. Repeatable to a maximum of 30 cr hrs when different areas or topics are covered. Specific emphasis of separate tours to be announced.

701 A Survey of Current Research and Trends in Early and Middle Childhood Education U G 3

Designed to emphasize the appraisal of recent research and the application of efficacious findings to teaching practice and educational policy in the area of early and middle childhood education. Haefele.
Su, Au, Wi Qtrs. 1 2½-hr cl or 2 1½-hr cl.

732 Corrective Reading U G 3

Diagnostic techniques and instructional methods and materials useful to the elementary and secondary classroom teacher in helping individuals and small groups of problem readers.

Prereq: 513 or Ed-C&F 435, and Psych 230.

734 Evaluation of Reading U G 3

Examination of current measurement techniques in reading from theoretical, technical, and cultural perspectives. Rentel.

Sp Qtr. 1 2½-hr cl. Not open to students with credit for Ed-Hums 734. Cross-listed in Ed-Hums.

736 Integrating Strategies: Teacher Questioning Behavior U G 3

Designed to analyze and facilitate mastery of question-asking strategies and techniques to improve instruction and the responding patterns of students. Cunningham.

Au, Sp Qtrs. 3 cl.

768 Directing Student Teachers U G 3

Principles and techniques for directing the laboratory experiences of student teachers and other teacher education students.

1 2½-hr cl. Prereq: Bachelor's degree, teacher's certificate, and teaching experience.

H799 Honors Course U G 3-5

A program of accelerated study and research for students with special aptitudes.

Su, Au, Wi, Sp Qtrs. Prereq: Enrollment in the Honors Achievement Program and permission of instructor. Repeatable to a maximum of 15 cr hrs.

811 Science in Elementary Education G 3

Problems of elementary school science instruction with emphasis on pertinent literature and classroom implementation of current developments in science curriculum and methodology.

Su, Au, Sp Qtrs. Prereq: 585, or secondary (587) student teaching, or 3 yrs teaching experience.

812 Mathematics in Elementary Schools G 3

Applications of research and theory to improve children's competence and problem solving; organization of instructional programs and contemporary instructional questions are considered.

Su, Au Qtrs. Prereq: 585, or secondary (587) student teaching, or 3 yrs teaching experience.

813 Language Arts in the Elementary School G 3

Problems, research, and current methods of teaching the four major areas of the language arts in the elementary school; listening, speaking, reading, writing.

Su, Au, Wi, Sp Qtrs. Prereq: 585, or secondary (587) student teaching, or 3 yrs teaching experience.

814 Social Studies in the Elementary School G 3

The educational values of social studies, reasons for and ways and means of integrating the social sciences with emphasis upon program innovations and research.

Prereq: 585, or secondary (587) student teaching, or 3 yrs teaching experience.

815 Guidance Problems in the Elementary School G 3

Selected problems which the elementary teacher faces in providing individual, small-group, and large-group guidance.

Su, Au, Sp Qtrs. Prereq: 585 or secondary (587) student teaching.

817 Advanced Course in Children's Literature G 3

An evaluation of the changing role and increased importance of literature in the education of children and youth today.

Su, Au, Wi, Sp Qtrs. Prereq: 467 or 813.

818 Foundations of Elementary Education G 3

Utilization of research in the basic sciences in developing background and understanding of present trends in elementary education; critical examination of current theories.

Su, Au, Sp Qtrs.

819 The Changing American Elementary School G 3

Involves investigation of objectives, issues, and curriculum organization of the modern elementary school program.

Prereq: 585, or secondary (587) student teaching, or 3 yrs teaching experience.

820 Evaluation in Elementary Schools G 3

Appraisal of materials and methods in terms of educational aims and research findings; consideration of instruments and procedures for comparing achievements with established objectives.

Su, Sp Qtrs. Prereq: 585, or secondary (587) student teaching, or 3 yrs teaching experience.

821 School Problems in Child Development G 3

Advanced study based upon research in education and related fields which aids the teacher in guiding developmental activities of children in the elementary school.

Su, Wi, Sp Qtrs.

823 Creative Experiences in the Elementary School Curriculum G 3

Study of the nature of creativity and aesthetics as related to the elementary school curriculum.

Su, Au, Sp Qtrs.

824 Designing School Programs for Children Age Two to Six G 3

A study of the characteristics and needs of children two to six years of age as they are related to the development of educational programs.

825 Methods of Developing Language and Cognition in Early Childhood G 3

Curriculum methods and materials in developing language and cognition in school programs for children ages three to eight, based upon research findings.

Wi Qtr. Prereq: 824, or permission of instructor.

826 Research in Early Childhood Education G 3

Exploration of research methods and techniques related to early childhood school programs; review of research in the field; in-depth investigation of interest area.

Prereq: Ed-Devel 785 and 786, or permission of instructor.

827 Advanced Study in the Teaching of Developmental Reading G 3

Designed to provide experienced teachers the opportunity to extend and update their knowledge of the reading process and the principles underlying effective reading instruction.

Su, Au, Wi Qtrs.

828 Trends and Issues in Teaching Reading in the Elementary School G 3

Designed for experienced teachers and curriculum workers; current developments, trends, and issues critically analyzed according to available research evidence.

Su, Au, Sp Qtrs. Prereq: 813, or permission of instructor.

829 Problems in Elementary School Curriculum and Supervision G 3

An analysis of the programs and practices involved in facing major curriculum problems in the elementary schools; supervision and curriculum will be synthesized.

Su, Au, Sp Qtrs. Prereq: 819 and Ed-C&F 861.

830 Early Childhood Education: Multi-Cultural Influences G 3

A study of early childhood curriculum content and teaching methods as influenced by multi-cultural factors. Smith.

Su, Sp Qtrs. 1 3-hr cl. Prereq: Written permission of instructor.

831 Understanding Preschool Play G 3

A study of relevant theories, developmental stages, and research as it relates to developing programs for young children. Wolfgang.

Su, Au Qtrs. 1 3-hr cl. Prereq: Ed-E&MC 460 or FM&HU DV 332 or 662 or permission of instructor.

832 Observing and Facilitating Preschool Play G 3

Continuation of 831, involves extensive analysis of experiences in facilitating preschool play and clinical experience regarding the play of young children. Wolfgang.

Wi Qtr. 1 3-hr cl or field experience. Prereq: Ed-E&MC 831 or equiv with written permission of instructor.

833 Critical Reading in the Content Fields G 3

Exploration of the problems of developing critical reading ability in a variety of curricular fields. Rentel.

Su, Wi Qtrs. Prereq: 827, or Ed-Hums 533; permission of instructor. Not open to students with credit for Ed-Hums 833. Cross-listed in Ed-Hums.

835 Science and Early Childhood Education G 3

The nature, scope and role of science experiences in the learning and development of young children; integration and application of current developments; theory and research in science with early childhood education. Languis.

Su, Au Qtrs. 1 3-hr cl. Prereq: Grad standing and experience with young children or introductory child development course.

836 Language Arts in the Early Childhood Program G 3

The process of children's language acquisition leading towards development of reading skills; practical applications from theory and research on language processing. Fox.

Su, Wi Qtrs. 1 3-hr cl. Prereq: Grad standing and experience in working with young children or introductory level child development course.

854 Reading in Its Social Setting G 3

The influence of culture on the nature, quality, and quantity of reading development; the relationship of reading to language development and mass media. Sp Qtr.

855 Practicum in Reading G 3

Application of research, diagnostic, prognostic, and program development methodology in field settings. Wi, Sp Qtrs. Lab arr. Prereq: Permission of instructor.

884 Planned Field Experience G 1-15

Planned professional teaching experience in a public school or other educational agency under supervision.

Prereq: Written permission of area adviser. Repeatable to a maximum of 15 cr hrs.

884.10 Elementary Education**884.56 Reading****884.70 Early Childhood Education****894 Group Studies G 1-5**

Advanced group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

894.10 Elementary Education**894.56 Reading****894.70 Early Childhood Education****920 Advanced Concepts in Elementary School Science Education G 3**

Emphasis on functions of leadership personnel in developing and improving elementary school science programs and on evaluation of current developments and research.

Wi Qtr. Prereq: 811, or permission of instructor.

921 A Guided Survey of Research in Reading G 3

Provides acquaintance with scientific studies relating to reading, methods used, results attained, including implications and limitations, and the problems meriting further investigation.

Prereq: 6 cr hrs in grad reading courses. Repeatable to a maximum of 6 cr hrs.

925 Seminars G 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times.

925.10 Elementary Education**925.56 Reading****925.70 Early Childhood Education****999 Research G Arr**

Research for thesis or dissertation purposes only. Su, Au, Wi, Sp Qtrs. Refer to decimal subdivisions under 925.

Education for Exceptional Children

Office: 371 Arps Hall, 1945 North High Street, 422-8787

251 Introduction to Exceptional Children U 3

Examination of the role of education in the habilitation and education of children and youth with learning and/or behavioral handicaps.

Au, Wi, Sp Qtrs. 1 2½-hr cl. Prereq: Written permission of instructor. Not open to students with credit for 289.02.

289 Field Experience U 3

Professional service with children or youth in some school or community agency.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

289.04 Speech and Hearing Therapy U 3

For students in the speech and hearing therapy curriculum.

289.54 Mental Retardation U 3

Au, Wi, Sp Qtrs. 5 hrs practicum. Not open to students with credit for 289.02.

494 Group Studies U 1-5

Group studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

494.54 Mental Retardation U 3

Group studies to accompany field experiences.

Au, Wi, Sp Qtrs. 1 2½-hr cl.

588 Student Teaching in Special Fields U 3-15

Au, Wi, Sp Qtrs. Prereq: Ed 4th yr standing and written permission of instructor.

A minimum of 15 cr hrs in student teaching is required. Repeatable to a maximum of 15 cr hrs. For additional information see College of Education bulletin.

588.04 Speech and Hearing Therapy**588.52 Blind and Partially Seeing****588.54 Educable Mentally Retarded****588.60 Physically Handicapped****642 The Educable Mentally Retarded: Introduction U G 3**

Study of causal factors, evaluation, learning potential, and general characteristics of the retarded child. Lema.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl. Prereq: 651 or Psych 570 and written permission of instructor. Not open to students with credit for 652.

643 Educational Assessment for the Mentally Retarded U G 3

Designed to prepare students to be informed consumers of standardized assessment information and to use formal and informal techniques with retarded children. Swassing.

Au Qtr. 1 2-hr cl; 3-hr practicum. Prereq: 642 or equiv and written permission of instructor.

644 Functional Behavioral Analysis I U G 3

Designed to develop skills and knowledge in the experimental analysis of behavior with emphasis on mental retardation. Cotter.

Au Qtr. 1 2-hr cl, 2-hr practicum. Prereq: 642 or equiv and written permission of instructor.

645 Case Studies in Mental Retardation U G 3

Designed to prepare students to present the results of educational assessments to administrators, co-workers, and parents of MR children. Swassing.

Wi Qtr. 1 2-hr cl, 3-hr practicum. Prereq: 643, 644, or written permission of instructor. Not open to students with credit for 652.

646 Functional Behavioral Analysis II U G 3

Designed to develop skills in applying behavioral principles and techniques in field experience with retarded and other handicapped persons. Cotter.

Wi Qtr. 1 2-hr cl, 3-hr. practicum. Prereq: 643, 644, or equiv and written permission of instructor.

647 Methods and Materials for Teaching the Elementary Level Mentally Retarded U G 6

Pre-service teachers develop educational strategies for instructional programs for primary level educable mentally retarded. Beaber and Lema.

Au Qtr. 5 cl, 10 hrs practicum. Prereq: 642, 643, 644, 645 and 646. Not open to students with credit for 654, 655, 656 or 657.

648 Secondary Methods in Teaching the Mentally Retarded U G 6

Presentation of the philosophy, objectives, and techniques for preparing the mentally retarded for occupational, social, and academic competence. Beaber.

Wi Qtr. 5 cl, 10 hrs practicum. Prereq: 647, and written permission of instructor. Not open to students with credit for 654, 655, 656 or 657.

649 Medical Aspects of Mental Retardation U G 2

Designed for non-medical practitioners in the field of mental retardation particularly educators; focus on issues of genetic, nutritional, neurological, psychiatric and pediatric nature; medical terminology.

Au, Sp Qtrs. 2 cl, 2 hr arr. Prereq: Permission of instructor and jr standing in non-medical programs leading to work with the mentally retarded. Class limited to non-medical disciplines.

651 Introduction to Exceptional Children U G 3

Exceptional children and their problems; including the intellectual deviant, visually handicapped, deaf and hard of hearing, children with speech problems; physically handicapped, and emotionally disturbed.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl. Prereq: Permission of instructor. Not open to students with credit for Psych 570.

658 Education for the Slow Learner U G 3

A critical examination of the educational problems of the slow learner with recommendations for organization of curriculum and programs to meet their needs.

Su, Au Qtrs. 1 3-hr cl. Prereq: 15 hrs in elementary or secondary education and permission of instructor.

659 Instructional Procedures for Developing Speech with the Hearing Impaired U G 3

Educational assessment of the spoken language of hearing impaired children and provision of individualized programs for speech development. Looney.

Sp Qtr. 1 2½-hr cl. Prereq: Permission of instructor.

660 Educational Assessment of Language of the Hearing Impaired U G 3

Theoretical and practical aspects of the educational evaluation, development and improvement of hearing impaired individuals' receptive and expressive language skills. Looney.

Au Qtr. 1 2½-hr cl. Prereq: Permission of instructor.

661 Educational Techniques of Developing Language with Children with Language Disorders U G 3

Practical application of educational techniques and procedures in developing comprehension and production of language with youngsters with language disorders.

Wi Qtr. 1 2½-hr cl. Prereq: 660, or permission of instructor.

662 Methods in School Speech and Hearing Therapy U G 3

Organizing speech and hearing therapy programs in schools; state programs; professional relations; procedures and materials for screening, scheduling, lesson planning, and evaluation.

Au Qtr. 1 3-hr cl. Prereq: 289.04.

663 Advanced Methods in School Speech and Hearing Therapy U G 3

Advanced therapy methods and techniques for the treatment of complex speech, language, and hearing problems encountered by the school speech and hearing therapist.

Wi Qtr. 1 3-hr cl. Prereq: 662.

665 Instructional Programs for Exceptional Children U G 3

Problems, evaluation, and adjustments related to the participation of exceptional children in the regular classroom, grades one through 12. Lema.

Au Qtr. 1 2½-hr cl. Prereq: Practice teaching, and permission of instructor.

670 Educational Disability U G 3

An overview of theory and practice, including causes, diagnostic procedures, remediation, and instructional materials.

Su, Au, Wi Qtrs. 1 2½-hr cl. Prereq: Ed-E&MC 507, or permission of instructor. Not open to students with credit for Psych 681.

671 Psycho-Educational Diagnostic Teaching U G 3

Using test materials in the diagnosis of special disabilities in school work; practice with remedial procedures.

Su, Au, Wi, Sp Qtrs. 1 2-hr cl, 3 1-hr lab arr. Prereq: Permission of instructor. Not open to students with more than 6 cr hrs of Psych 683. Repeatable to a maximum of 9 cr hrs.

680 Introduction to Education for Visually Handicapped Children U G 3

Survey of historical, legislative, social and psychological aspects of blindness; educational and vocational programming, services and resources will be identified in conjunction with field experiences. Saylor.

Su, Au Qtrs. 1 2½-hr cl. Prereq: 651.

681 Anatomy, Physiology and Educational Implications of the Eye U G 3

Ophthalmologists and optometrists present medical aspects of the eye and its disorders as an educator discusses ocular reports and educational implications for the visually handicapped. Saylor. Su, Au Qtrs. 1 2½-hr cl. Prereq: Permission of instructor.

682 Reading and Writing Literary Braille U G 3

Development of proficiency in reading and writing Grade II Braille through programmed instruction. Saylor.

Su, Au Qtrs. 1 2½-hr cl. Prereq: Permission of instructor.

683 Communication Skills for the Visually Handicapped U G 2

Special braille codes and the use of auditory, visual and tactual mediums and techniques for teaching communication skills to the visually handicapped. Saylor.

Su, Wi Qtrs. 1 2-hr cl. Prereq: 682.

684 Curriculum Development and Adaptations for Visually Handicapped Children U G 4

The selection, development and adaptation of materials and procedures for the education of visually handicapped children of varying levels of ability and need. Saylor.

Su, Wi Qtrs. 2 2-hr cl. Prereq: 680, 681 and 682.

685 Orientation and Mobility for Visually Handicapped Children U G 3

Practicum experiences in conjunction with the development of readiness activities, instruction and assessment of pre-cane orientation and mobility skills for the visually handicapped. Saylor.

Su, Wi Qtrs. 1 2½-hr cl. Prereq: 680 and 681.

692 Workshops U G 1-8

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Su Qtr. Cl hrs arr. Prereq: Teaching experience; and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs.

692.04 Speech and Hearing Therapy**692.47 Exceptional Children****692.52 Blind and Partially Seeing****692.54 Educable Mentally Retarded****692.61 Child Study****692.62 Learning and Behavioral Disorders****692.64 Educational Disability****692.66 Gifted****693 Individual Studies U G 1-4**

Su, Au, Wi, Sp Qtrs. Prereq: Ed-C&F 435 or Ed-E&MC 460, and permission of instructor. A total of not more than 30 cr hrs of individual study (any 693) will apply toward graduation for undergrad students, or 45 cr hrs for grad students.

693.04 Speech and Hearing Therapy**693.47 Exceptional Children****693.52 Blind and Partially Seeing****693.54 Educable Mentally Retarded****693.55 Deaf and Hard of Hearing****693.61 Child Study****693.62 Learning and Behavioral Disorders****693.64 Educational Disability****693.66 Gifted****694 Group Studies U G 1-5**

Group studies on special problems in education.

Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

694.47 Exceptional Children**694.52 Blind and Partially Seeing****694.54 Educable Mentally Retarded****694.55 Deaf and Hard of Hearing****694.61 Child Study****694.62 Learning and Behavioral Disorders****694.66 Gifted****712 Issues and Trends in the Education of the Hearing Impaired U G 3**

Current national, state and local issues related to the psychological, sociological, vocational and educational development of the hearing impaired child. Collins.

Su Qtr. 1 2½-hr cl. Prereq: Permission of instructor.

713 Reading in Perspective for the Hearing Impaired U G 3

Educational assessment of the syntactical, semantic, and developmental reading levels of the hearing impaired student and the development of an individualized reading program. Looney.

Au Qtr. 3 cl. Prereq: 660 and 661.

714 Curriculum Adaptations in Programs for the Hearing Impaired U G 3

Development and adaptation of curriculum, materials and instructional procedures for teaching special subject areas with hearing impaired students. Collins.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

715 Education of Multihandicapped Children U G 3

Differential diagnosis, classification, educational placement, and adjustment of multihandicapped children. Soforenko.

Au, Sp Qtrs. 1 2½-hr cl. Prereq: 651, or Psych 570, and permission of instructor.

718 Introduction to Socially and Emotionally Handicapped U G 3

Identification, overview of educational treatments, social behavior problems in the school, educational placements, certification, funding, and trends. K. Hunt.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl. Prereq: Permission of instructor.

721 Introduction to Education of Deaf-Blind and Multiply-Handicapped Children U G 3

Introduction to education of deaf-blind and multiply-handicapped includes characteristics, history, legislation, educational assessment, programs, plus media and materials for deaf-blind and multiply-handicapped children. Yarnall.

Su, Au, Sp Qtrs. Prereq: Written permission of instructor. Preference given to students who have shown interest and/or commitment to deaf-blind and multiply-handicapped children.

723 Programming for Low Incidence Handicapped Children U G 3

Survey of major curriculum/programming areas and application of procedures to hearing impaired, visually impaired, severely retarded, deaf-blind and multiply-handicapped children. Yarnall.

Wi Qtr. Prereq: 721 or written permission of instructor. Preference given to students with experience and/or commitment to deaf-blind and multiply-handicapped children.

725 Advanced Educational Procedures and Programming for Deaf-Blind and Multiply-Handicapped Children U G 3

Advanced educational procedures and programming for deaf-blind and multiply-handicapped children; involves designing and field testing teaching projects in eight basic curricula areas. Yarnall.

Au, Sp Qtr. Prereq: 723 or equiv with written permission of instructor. Repeatable to a maximum of 6 cr hrs.

727 Educational Assessment of Deaf-Blind and Multiply-Handicapped Children U G 3

Educational assessment of deaf-blind and multiply-handicapped children includes investigation of tools and methods for ascertaining auditory, visual developmental, and psychological characteristics and levels of function. Yarnall.

Wi Qtr. Prereq: 721 and 723 or equiv with written permission of instructor.

730 Foundations of Education for the Hearing Impaired U G 3

Analysis of historical and current issues in the education of the hearing impaired at the national, regional, state, and local levels—schools, organizations, agencies, professionals. Collins.

Au Qtr. 1 3-hr cl. Prereq: 651 and written permission of the instructor.

738 Modes of Communication for Teaching Hearing Impaired Children U G 3

Study and practical experience in the use of communication modes utilized by hearing impaired children. Emphasis on oral, dactyl, language of signs and combined modes as applied to schooling. Looney.

Su Qtr. 1 3-hr cl. Prereq: 660, 661, and written permission of instructor.

740 Psychosocial Aspects of Hearing Impairment on School Children U G 3

The effects of hearing impairment on psychological and social development and functioning on school aged youth. Emphasis on information gathering and analysis, cognition, communication, socialization, education-vocational considerations, adjustment in relation to school learning. Collins.

Au Qtr. 1 3-hr cl. Prereq: Written permission of instructor.

770 Introduction to Learning Disabilities U G 3

Education treatments, social problems in schools, overview of educational treatments, educational placements, certification, funding and trends. Hubbard and Parks.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl. Prereq: Permission of instructor.

771 Exceptional Children: Assessment and Instruction U G 6

Application of behavioral technology to children with learning and behavioral disorders in clinical settings. Stephens.

Au, Wi, Sp Qtrs. 3 cl, 3 lab. Prereq: 718 or 770, and 772.

772 Applying Behavioral Approaches in the Classroom U G 3

Classroom management problems, classroom engineering, assessment for teaching and roles of key

people in a behavioral model designed for children with learning and behavior disorders. K. Hunt.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl. Prereq: 718 or 770.

773 Directive Teaching of Exceptional Children U G 3

Principles of behavior and their application. Cooper.

Su, Au, Wi, Sp Qtrs. Prereq: 718 or 770.

774 Applied Behavioral Analysis of Exceptional Children U G 3

Designed to help students develop skills in directive teaching with exceptional children. Cooper.

Sp Qtr. Prereq: 718 or 770, 773.

775 Observation Study of Exceptional Children U G 3

Measurement and evaluation techniques, research designs, geared to teacher application in the classroom. Cooper.

Au, Wi Qtrs. Prereq: 718 or 770, 773.

776 Educational Assessment and Remediation of Auditory Receptive and Perceptive Disorders U G 3-6

Educational assessment, planning, and implementation of instructional strategies for developing receptive, perceptive skills.

Au, Wi Qtrs. 1 2½-hr cl. Prereq: Written permission of instructor. Repeatable to a maximum of 6 cr hrs.

786 Trends and Issues in Teaching the Visually Handicapped U G 3

Study of educational and technological research and literature; social implications and psychological aspects of visual impairments; testing, program and vocational planning. Yarnall.

Su, Sp Qtrs. 1 2½-hr cl. Prereq: 684.

846 Behavioral Approaches in Schools G 3

Focuses on consulting with teachers of learning and behaviorally handicapped children; a systems approach is stressed; students devise and monitor instructional systems which are implemented with groups of children. Stephens.

Sp Qtr. 1 1½-hr cl, lab arr. Prereq: 771. Repeatable to a maximum of 6 cr hrs.

847 Preparation of Handicapped Children for Post-School Adjustment G 3

Study of the roles of education, guidance, work experience, placement, and follow-up service in helping handicapped children adjust to employment, family, and community life. Swassing.

Su, Au, Wi Qtrs. 1 2½-hr cl. Prereq: 651, or Psych 570, and permission of instructor.

848 Management and Administration of Programs for Exceptional Children G 4

A review of technology, trends and issues basic to the management and operation of a special education program with the intention of preparing leadership personnel.

Au, Wi, Sp Qtrs. 1 3½-hr cl. Prereq: 651, grad status in special education, or written permission of instructor.

884 Planned Field Experience G 3-15

Planned professional teaching experience in a public school or other educational agency under supervision.

Prereq: Written permission of area advisor.

Repeatable to a maximum of 15 cr hrs.

884.47 Exceptional Children

- 884.52 **Blind and Partially Seeing**
- 884.54 **Educable Mentally Retarded**
- 884.55 **Deaf and Hard of Hearing**
- 884.61 **Child Study**
- 884.62 **Learning and Behavioral Disorders**
- 884.64 **Educational Disability**
- 884.66 **Gifted**

885 **Supervised Teaching in Special Education G 3-6**

Student teaching for qualified students in the area of special education.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Not open to students with credit for Ed 710. Repeatable to a maximum of 15 cr hrs.

- 885.52 **Blind and Partially Seeing**
- 885.54 **Educable Mentally Retarded**
- 885.55 **Deaf and Hard of Hearing**
- 885.60 **Physically Handicapped**
- 885.62 **Learning and Behavioral Disorders**

894 **Group Studies G 1-5**

Advanced group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

- 894.47 **Exceptional Children**
- 894.52 **Blind and Partially Seeing**
- 894.54 **Educable Mentally Retarded**
- 894.55 **Deaf and Hard of Hearing**
- 894.61 **Child Study**
- 894.62 **Learning and Behavioral Disorders**

899 **Interdepartmental Seminar G 1-5**

Two or more departments may collaborate with any program area in the Faculty for Exceptional Children in presenting seminars on subjects of mutual interest; topics to be announced.

Cl hrs arr. Prereq: Written permission of instructor. Repeatable by permission.

925 **Seminars G 2-5**

Prereq: Permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times. Research problems in:

- 925.47 **Exceptional Children**
Su, Au, Wi, Sp Qtrs.
- 925.52 **Blind and Partially Seeing**
- 925.54 **Educable Mentally Retarded**
Su, Au, Wi, Sp Qtrs.
- 925.55 **Deaf and Hard of Hearing**
Au, Sp Qtrs.
- 925.61 **Child Study**
Su, Au, Wi, Sp Qtrs.
- 925.62 **Learning and Behavioral Disorders**
Su, Au, Sp Qtrs.
- 925.64 **Educational Disability**
Su.
- 925.66 **Gifted**

986 **Developmental Assessment I G 3**

Use of testing and observational techniques in developmental assessment with major emphasis on collecting and evaluating data related to global cognitive and affective functioning. Engin.

Au Qtr. 1 3-hr cl. Prereq: Permission of instructor.

987 **Developmental Assessment II G 3**

Continuation of 986, with emphasis on the techniques

developed to assess specific abilities and disabilities for educational planning. Engin.

Wi Qtr. 1 3-hr cl. Prereq: Permission of instructor.

988 **Developmental Assessment III G 3**

Continuation of 987, with emphasis on the analysis, synthesis, and interpretation of data. Engin.

Sp Qtr. 1 3-hr cl. Prereq: Permission of instructor.

989 **Developmental Assessment IV G 3**

Continuation of 988, with emphasis on intervention and the evaluation of intervention techniques. Engin.

Su Qtr. 1 3-hr cl. Prereq: Permission of instructor.

990 **Supervised Practice in Developmental Assessment G 2**

Within a school setting, under close supervision, students assess limited numbers of children, emphasizing global techniques, specific techniques, educational planning, and counseling with children, teachers, and parents.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor; must be taken concurrently with one of the following: 986, 987, 988, or 989. Repeatable to a maximum of 10 cr hrs.

991 **The School Psychologist in American Schools G 3**

Overview of trends and issues confronting the professional school psychologist; establishing and maintaining a program of school psychological services. Engin.

Sp Qtr. 1 3-hr cl. Prereq: Permission of instructor.

992 **Internship in Child Study G 3, 6, 9, or 12**

Limited to selected PhD and post-master's students majoring in school psychology; the student, staff member, and local school supervisor plan these professional experiences. Engin.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 36 cr hrs.

999 **Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. Refer to decimal subdivisions under 925.

Education: Humanities

Office: 238 Arps Hall, 1945 North High Street, 422-5381

289 **Field Experience U 2-5**

Professional service with children or youth in some school or community agency.

Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

289.02 **Experience in a Community Agency**

289.09 **Speech and Radio-Speech**

For students in the curricula Speech and Radio-Speech.

289.45 **Foreign Languages**

294 **Special Group Studies U 1-5**

Group studies for students in specialized programs.

Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

294.28 **Teaching of Social Studies**

294.45 **Teaching of Foreign Languages**

442 Creative Dramatics U 3

Philosophy, materials, methods, and evaluation of dramatic improvisation in developing creative artistic expression and problem solving.

Su, Au, Wi, Sp Qtrs. 3 cl and lab. Prereq: Psych 230, or equiv.

526 Social Studies in the Secondary School U 4

A study of the role of social studies in the secondary school. Focuses on the teacher, community, the nature of content, student needs, inquiry, and planning. Gilliom.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: Ed-C&F 435.

527 Curriculum, Materials, Resources, and Teaching Strategies for Secondary Social Studies U 4

A study of social studies curricula and an analysis of materials, of resources, and teaching strategies for use in secondary social studies. Gilliom.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 526 and Ed-C&F 435.

533 Fundamentals of Secondary Reading Instruction U 3

Principles, methods, and materials of reading instruction in secondary schools. Rentel.

Au, Wi, Sp Qtrs. 3 cl.

540 The Teaching of Modern Foreign Language I U 4

Study of the preparation and use of new instructional materials for beginning foreign language classes; the teaching of language skills and culture; evaluation.

Au, Sp Qtrs. 2 2-hr cl. Prereq: 289.45, Ed-C&F 435, and written permission of instructor. Repeatable to a maximum of 8 cr hrs; subdivisions not repeatable.

540.11 French

540.12 Spanish

540.13 German

540.14 Russian

556 The Teaching of Speech in Secondary Schools U 4

The relationship of speech to the total school program with special emphasis on fundamental processes and forensic activities.

Su, Au, Sp Qtrs. 4 cl. Prereq: Ed-C&F 435 and Communic 240, 305 and 505.

560 Teaching the Reading of Literature U 4

The objectives of the literature program and techniques for developing appreciation and improving skills in the reading of various types of prose and poetry.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: Ed-C&F 435 or equiv.

561 Teaching Language and Composition in Secondary Schools U 4

The role of grammar and linguistics in the English program and techniques for the teaching of oral and written expression in high school.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: Ed-C&F 435 or equiv.

586 Elementary School Student Teaching in Foreign Languages U 3

Observation, participation, and responsible teaching of a foreign language in an elementary school; conferences or seminars.

Au, Wi, Sp Qtrs. Prereq: Ed 4th yr standing. Repeatable to a maximum of 6 cr hrs.

587 Student Teaching in Secondary Schools U 3-15

Observation, participation, and responsible teaching in a public school in the greater Columbus area; individual and group conferences or seminars. Students desiring teaching in more than one area should indicate accurately both section numbers and hours in each.

Prereq: Ed 4th yr standing. Repeatable to the required 15 cr hrs. For additional information, see College of Education bulletin.

587.09 Speech-Theatre Education

Prereq: 556 or 631. A minimum of 15 cr hrs in student teaching is required (9 cr hrs in 587.09 and 6 cr hrs in 588).

587.25 English

Prereq: 560 and 561.

587.28 Social Studies**587.45 Foreign Languages**

a—French

b—Spanish

c—German

d—Russian

e—Latin

f—English

588 Student Teaching in Radio-Speech Education U 3-15

Au, Wi, Sp Qtrs. Prereq: 556 and 4th yr standing in ed. Repeatable to 6 cr hrs. A minimum of 15 cr hrs of student teaching is required 9 cr hrs in 587.09 and 6 cr hrs in 588. For additional information, see College of Education bulletin.

589 Laboratory Experiences in English Education U 1-3

A field-based laboratory designed to provide tutoring, materials development, test construction and evaluation, appraisal, and instructional planning experiences within the English curriculum.

Au, Wi, Sp Qtrs. Arr. Prereq: Ed-C&F 435 or equiv with written permission of instructor. Repeatable to a maximum of 15 cr hrs. May be taken concurrently with one of the following: 533, 560, 561, 612, or 613.

612 Linguistic Materials for Teachers U G 3

Study of linguistic systems, language acquisition, and sociolinguistics as they bear on the work of classroom teachers.

Su, Au, Wi, Sp Qtrs.

613 Literature for Adolescents U G 3

Literature for individual, group and whole-class reading in junior and senior high schools; interest factors, readability, and literary value as criteria for selection; bibliographic aids.

Su, Au, Wi, Sp Qtrs. Prereq: Ed-C&F 435 or equiv.

616 The Teaching of Modern Foreign Language II U G 4

Study of the use of new instructional materials for intermediate and advanced foreign language classes; teaching of reading, writing, literature, and culture; evaluation.

22-hr cl. Prereq: 540. Repeatable to a maximum of 8 cr hrs; subdivisions not repeatable.

616.11 French

Au, Wi Qtrs.

616.12 Spanish

Wi, Sp Qtrs.

616.13 German

Wi Qtr.

616.14 Russian
Wi Qtr.

616.15 English (TESOL)
Au Qtr.

616.16 French, Spanish, German, Russian
Su Qtr.

617 The Teaching of Foreign Languages in the Elementary School U G 4

Skill development in teaching of spoken and written foreign languages on the elementary school level; construction and use of suitable materials; discussion of issues and problems, evaluation. Woodruff.

Su, Au Qtrs. Prereq: 15 cr hrs of ed and written permission of instructor.

618 The Teaching of Latin U G 4

Content of this course includes: values, teachers' equipment, objectives, and methods; classroom procedures; lectures, and assigned readings.

Au Qtr. 3 cl, lab arr. Prereq or concur: Ed-C&F 435, Latin 201, 202, and an additional 6 cr hrs in Latin.

619 Foreign Language Education Residence in Europe U G 2-5

Practicum in language, language teaching, history and culture in a foreign country; each student lives with a family, participates in instruction-related activities and in the study of social and cultural differences. Woodruff.

Sp Qtr. Prereq: Written permission of instructor; preregistration autumn quarter. Repeatable to a maximum of 30 cr hrs.

619.11 France

619.12 Spain

624 Social Education U G 3

Analyses of social structures and processes in classroom grouping arrangements; teacher social roles, school traditions, ceremonies, clubs, and athletics.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl. Prereq: Ed-C&F 435 or Ed-E&MC 461, or permission of instructor.

629 Storytelling, Dramatization and Creativity U G 3

Developing skills in storytelling and dramatization processes; conceptual and theoretical criteria to be developed from laboratory practice; emphasis on developing instrumentation for evaluation.

Au, Sp Qtrs. 1 3-hr cl, 1- to 2-hr lab. Prereq: Experienced teacher or sr standing with some field experience.

630 Children's Theatre: Production and Direction U G 5

Selection, production and direction of plays for children with special focus upon school and recreation problems. Lewis.

Au, Wi, Sp Qtrs. Prereq: Theatre 220. Not open to students with credit for Theatre 565 or 501. Offered in cooperation with Theatre.

631 Teaching Dramatics and Oral Interpretation in Secondary Schools U G 4

The organization and conduct of dramatic classes and extra dramatic activities; resource planning for oral readings, choral speaking, radio-television programming, and theatrical production. Lewis.

Su, Wi Qtrs. 4 cl. Prereq: 630, Ed-C&F 435, Communic 221, Theatre 220, 271, and 280.

692 Workshops U G 1-8

Intensive study of a problem common to the

participants for the purpose of developing sound principles and practices relating to it.

Su Qtr. Arr. Prereq: Teaching experience and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs.

692.09 Speech-Theatre Education

692.25 English Education

692.28 Social Studies

692.45 Foreign Language Education

693 Individual Studies U G 1-4

Su, Au, Wi, Sp Qtrs. Prereq: Ed-C&F 435 or Ed-E&MC 460, and permission of instructor. A total of not more than 30 cr hrs of individual study any 693 will apply toward graduation for undergrad students, or 45 cr hrs for grad students.

693.09 Speech-Theatre Education

693.25 Teaching of English

693.28 Teaching of Social Studies

693.45 Teaching of Foreign Languages

694 Group Studies U G 1-5

Group Studies on special problems in education.

Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

694.09 Speech-Theatre Education

694.25 Teaching of English

694.28 Teaching of Social Studies

694.45 Teaching of Foreign Languages

698 Study Tour of Foreign Schools and Culture U G 1-15

Five weeks intensive study of educational and cultural topics fundamental to central purpose of tour, then equal period of supervised observation of schools and related cultural factors in one or more foreign countries; specific emphases of separate tours to be announced.

Su, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 25 cr hrs when different areas or topics are studied. Not open to students with maximum allowable credit for 689.

734 Evaluation of Reading U G 3

Examination of current measurement techniques in reading from theoretical, technical, cultural perspectives. Rentel.

Sp Qtr. 1 2½-hr cl. Not open to students with cr for Ed-E&MC 734. Cross-listed in Ed-E&MC.

739 Applied Linguistics in the Teaching of Foreign Languages U G 3

Analysis of research in applied linguistics; construction of drills, laboratory exercises, and tests; lexical items and structural inventory of French or Spanish. Allen.

Su, Sp Qtrs. 2 1½-hr cl. Prereq: 15 cr hrs in ed, and at least one French or Spanish course on the 600 level.

739.11 French

Not open to students with credit for 839a.

739.12 Spanish

Not open to students with credit for 839b.

833 Critical Reading in the Content Fields G 3

Exploration of the problems of developing critical reading ability in a variety of curricular fields. Rentel.

Su, Wi Qtr. Prereq: 533 or Ed-E&MC 827; or equiv with written permission of instructor. Cross-listed in Ed-E&MC. Not open to students with cr for Ed-E&MC 833.

873 Popular Culture and the Teaching of English G 3

Analysis of the role of mass media/popular culture in our society; values and themes in popular culture; development of critical skills to analyze popular culture. Mertz.

Su, Au Qtrs. 1 3-hr cl. Prereq: Grad standing.

882† Materials and Methods in the Social Studies G 3

Study of recent innovations in teaching methodology in the social studies; review and evaluation of recently published teaching materials. Gilliom.

Au Qtr. 1 2½-hr cl.

883 Organization and Teaching of Social Studies G 5

Study of problems encountered in the conceptualization, planning, and teaching of the secondary social studies methods course. Gilliom.

Au, Wi Qtrs. 2 cl and 22-hr lab. Prereq: PhD standing in College of Education.

884 Planned Field Experience G 3-15

Planned professional teaching experience in a public school or other educational agency under supervision.

Prereq: Written permission of area adviser.

Repeatable to a maximum of 15 cr hrs.

884.09 Speech Education

884.25 Teaching of English

884.28 Teaching of Social Studies

884.45 Teaching of Foreign Languages

894 Group Studies G 1-5

Advanced group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

894.09 Speech-Theatre Education

894.25 Teaching of English

894.28 Teaching of Social Studies

894.45 Teaching of Foreign Languages

925 Seminars G 2-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times.

925.09 Speech-Theatre Education
Lewis.

925.25 Teaching of English

925.28 Teaching of Social Studies
Gilliom, Jewett, and Muessig.

925.45 Teaching of Foreign Languages
Allen and Jarvis.

962 Seminar in Foreign Language Education G 4

Analysis of major research studies and projects; evaluation and implications of findings; research considerations unique to foreign language education. Jarvis.

Sp Qtr. 1 3-hr cl; 1 lab arr. Prereq: Written permission of instructor.

963 Foreign Language Testing G 4

Theory and practice of foreign language test construction including item writing, item analysis, reliability, validity, scoring, and interpretation. Jarvis.

Sp Qtr. 2 2-hr cl. Prereq: Permission of instructor.

970 The English Curriculum: Language and Composition G 3

An evaluation of current trends and developments in linguistics and composition instruction and their relevance for the English curriculum.

Su, Au, Wi Qtrs. 3 cl.

971 The English Curriculum: Literature G 3

Critical examination of trends in the secondary school literature program.

Su Qtr.

972 The English Curriculum: Studies in the Teaching of Literature G 3

Role of literary theory and aesthetics in English curriculum development; study of the relation of literature to the other arts. Stewart.

Su, Wi Qtrs.

982 Evaluation in Secondary Social Studies Education G 3

A seminar concerned with testing, measurement, and evaluation in secondary social studies; treatment of teacher-made standardized tests; discussion of reporting practices. Muessig.

Au Qtr. 1 2½-hr cl. Prereq: Certification in secondary social studies. Admission to grad program in secondary social studies.

984 Curriculum Theory and Development in Secondary Social Studies Education G 3

Seminar devoted to curriculum theory and development in secondary social studies education; simulation experience where participants build a secondary social studies program. Muessig.

Su, Wi Qtrs. 1 2½-hr cl. Prereq: Certification in secondary social studies. Admission to grad program in secondary social studies.

985 Theories of Secondary Social Studies Education G 3

A seminar devoted to basic theories of secondary social studies education; discussion of subject-centered, emergent needs, citizenship, reflective, and discipline-oriented approaches. Muessig.

Sp Qtr. 1 2½-hr cl. Prereq: Certification in secondary social studies. Admission to doctoral program in secondary social studies.

999 Research G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. Refer to decimal subdivisions under 925.

Education: Industrial Technology

Office: 200 Welding Engineering Laboratories, 190 West 19th Avenue, 422-7471

120 Industrial Practices and the School U 4

Basic studies in industrial arts; introduction to industrial tools, materials, and processes; study of past, present, and future industrial arts school programs; observation and participation in local schools.

Au, Wi, Sp Qtrs. 5 2-hr cl and lab.

220 Design of Constructed and Manufactured Goods U 3

A study of historical and contemporary design technology as it is applied in the construction and manufacturing industries.

Au, Wi, Sp Qtrs. 2 2-hr cl and lab. Prereq: En Graph 121.

221 Manufacturing Practices I U 4

A study of basic concepts of manufacturing technology through experiences in forming, separating, combining, and assembling materials used in the production of manufactured goods.

Au, Wi, Sp Qtrs. 5 2-hr cl and lab. Prereq: 120 and 220.

222 Manufacturing Practices II U 5

A study of manufacturing management technology, manufacturing production technology, and manufacturing personnel technology through experiences in planning, engineering and production of selected manufactured goods.

Au, Sp Qtrs. 5 2-hr cl and lab. Prereq: 221.

224 Mechanical Systems and Servicing U 4

A study of the fundamental knowledge of techniques necessary for the application of mechanical power systems to industrial activities and the practices of servicing mechanical power systems.

Au, Wi, Sp Qtrs. 5 2-hr cl and lab. Prereq: 120

225 Transmitting and Utilizing Mechanical Power U 4

A study of the selection, installation, operation, and maintenance of mechanical power transmission systems for industrial and transportation activity.

Au, Wi Qtrs. 5 2-hr cl and lab. Prereq: 224.

227 Electrical Systems and Servicing U 4

A study of the fundamental knowledge of techniques necessary for the application of electricity to industrial activities and the practices utilized in fabricating and servicing of electrical systems.

Au, Wi, Sp Qtrs. 5 2-hr cl and lab. Prereq: 120.

228 Electronic Systems and Servicing U 4

A study of the fundamental knowledge of techniques necessary for the application of electronics to industrial activities and the practices utilized in fabricating and servicing electronic systems.

Wi, Sp Qtrs. 5 2-hr cl and lab. Prereq: 227.

231 Construction Practices I U 5

A study of basic concepts of construction technology through experiences in forming, separating, and combining materials used in the production of residential structures.

Au, Wi, Sp Qtrs. 5 2-hr cl and lab. Prereq: 120 and 220.

232 Construction Practices II U 5

A study of construction management, production, and personnel technologies through real and simulated experiences in the production of constructed goods.

Au, Sp Qtrs. 5 2-hr cl and lab. Prereq: 231.

235 Graphic Reproduction Practices U 4

An examination of graphic reproduction processes, manipulative skills necessary to teach graphic reproduction processes, and administrative procedures required to operate a graphic arts program.

Au, Wi, Sp Qtrs. 5 2-hr cl and lab. Prereq: 120 and 220.

236 Printing and Publishing Practices U 4

An examination of the managed production system utilized in the printing and publishing industry.

Au, Sp Qtrs. 5 2-hr cl and lab. Prereq: 235.

243 Elementary School Industrial Arts Activities U 5

Laboratory experiences involving the use of tools, materials, processes, and products through which society supplies its need for food, clothing, shelter, tools, machines, records, utensils, and transportation.

Au, Wi, Sp Qtrs. 5 2-hr cl and lab. Prereq: Major standing in elementary or special ed.

251 Work Experience in Industry U 3-6

A firsthand study of working conditions, methods, and processes of industry, and their implication for the teaching of industrial arts.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

255 The Handicrafts U 4

Designed to develop skills and knowledge in the use of the common areas of handicrafts such as leather, metals, plastics, wood, and the graphic arts.

Au, Wi, Sp Qtrs. 5 2-hr cl and lab. Open only to occupational therapy, physical education, and public recreation majors. Repeatable to a maximum of 12 cr hrs.

289 Field Experience in a Community Agency U 2-5

Professional service with children or youth in some school or community agency.

Au, Wi, Sp Qtrs. Prereq.: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

355 Custom Production of Industrial Goods U 4

A study of custom production planning and custom production processing of industrial goods through experiences in the custom production of selected manufactured goods.

Au, Sp Qtrs. 5 2-hr cl and lab. Prereq: 3rd yr standing in major. Not open to students with credit for 255.

436 The Teaching of Driver Education U 3

Designed to prepare teachers to organize and conduct driver training classes in the secondary schools, including methods of teaching, scheduling, and other pertinent details.

Su, Au, Wi, Sp Qtrs. 1 2-hr cl; 1 2-hr lab. Prereq: Ed-C&F 435 and valid driver's license. Not open to students with credit for Ed 433. Graduates of the College of Education who complete 436, 437 and 438, or Ed 433, will be eligible for certification to teach driver training courses in the secondary schools of Ohio.

437 Advanced Course in the Teaching of Driver Education U 3

Organization and administrative aspects of driver and traffic safety education plus orientation in the use of driving simulators and driving ranges. Hoffman.

Su, Wi Qtrs. 3 cl. Prereq: 436.

438 Personality and Behavioral Factors in Driver and Traffic Safety Education U 3

Study of human behavior with emphasis on attitudes, motivation, and adjustment, and their relationship to safe driving.

Su, Sp Qtrs. 3 cl. Prereq: 436; can be taken concur with 437.

494 Group Studies U 1-5

Group studies for students in specialized programs. Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

520 Wood Products Manufacturing U G 5

Wood product design; production organization and control; tools and equipment used to perform production practices. Wood product production. Blankenbaker.

Au Qtr. 5 2-hr labs. Prereq: 231 or equiv with written permission of the instructor.

532 The Teaching of Industrial Arts I U 3

Study of the societal forces and problems attributable to technology; historical, sociological, and psychological bases of industrial arts instruction; development of a philosophy underlying industrial technology education.

Au Qtr. 1 2½-hr cl. Prereq or concur: Ed-C&F 435.

533 The Teaching of Industrial Arts II U 3

Analysis of educational ends and means for industrial arts; development of units of study for contemporary industrial arts programs; review of exemplars in curriculum, instruction, and evaluation

Wi Qtr. 1 2½-hr cl. Prereq: 532.

534 The Teaching of Industrial Arts III U 3

Study and application of specific teaching methods including lecture, demonstration, discussion, use of media; problems of classroom management and deviant student behavior; laboratory facilities and safety; professional considerations.

Sp Qtrs. 1 2½-hr cl. Prereq: 532 and 533.

587 Student Teaching in Secondary Schools U 3-15

Observation, participation, and responsible teaching in a public school in the greater Columbus area; individual and group conferences or seminars. Students desiring teaching in more than one area should indicate accurately both section numbers and hours in each.

Su, Au, Wi, Sp Qtrs. Prereq: Ed 4th yr standing. Repeatable to the required 15 cr hrs. For additional information, see College of Education bulletin.

H599 Honors Course U 3-5

A program of accelerated study for students with special aptitudes.

Su, Au, Wi, Sp Qtrs. Prereq: Enrollment in the Honors Achievement Program and permission of instructor. Repeatable to a maximum of 15 cr hrs.

610 History of Practical Arts and Vocational Education U G 3

History of those vocational and non-vocational phases of agriculture, business, industry, and homemaking which concern education. Lux.

Su, Wi Qtrs. 3 cl.

632 Industrial Arts in the Elementary School U G 3

Selection, development, and evaluation of typical experience units in both classrooms and practical arts laboratory situations at all levels of the elementary schools. Blankenbaker.

Sp Qtr 3 cl. Prereq: 243 or equiv. Not open to students with credit for 832.

633 Industrial Arts Curriculum Planning U G 3

Analysis of curriculum research and development

process; review critical analysis of instructional materials; application of industrial arts curriculum, instruction, and evaluation principles to practical arts, career, and vocational education.

Su, Au Qtrs. One 2½-hr cl. Prereq: Secondary (587) student teaching, or equiv. Not open to students with credit for 833.

634 Planning Industrial Arts Facilities U G 3

Principles of industrial arts and technical laboratory planning including equipment selection for all school levels and meeting all curriculum requirements. Ray and Umstattd.

Su, Wi Qtrs. 1 2½-hr cl. Not open to students with credit for 834.

692 Workshops U G 1-8

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Su, Au, Wi, Sp Qtrs. Cl hrs arr. Prereq: Teaching experience, and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs.

693 Individual Studies U G 1-4

A total of not more than 30 cr hrs of individual study (any 693) will apply toward graduation for undergrad students, or 45 cr hrs for grad students.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

694 Group Studies U G 1-5

Group studies on special problems in education.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

730 Technological Activities for Teachers of Exceptional Children U G 4

The application of technological practices in developing instructional materials and activities useful in diagnostic and remediation procedures for exceptional learners. Buffer.

Au Qtr. 3 2-hr cl and lab. Prereq: Ed-Excep 651 or 718 or equiv with written permission of instructor. Repeatable to a maximum of 8 cr hrs.

735 Organization and Administration of Industrial Education U G 3

International and historic background curriculum resources and development, physical organization, administrative organization, supervisory operation, and professional policies. Lux.

Su Qtr. 1 2½-hr cl. Not open to students with credit for 835.

H799 Honors Course U G 3-5

A program of accelerated study and research for students with special aptitudes.

Su, Au, Wi, Sp Qtrs. Prereq: Enrollment in the Honors Achievement Program and permission of instructor. Repeatable to a maximum of 15 cr hrs.

830 Development of Industrial Technology and Prevocational Education Programs for the Educationally Disadvantaged and Handicapped G 3

Analysis of educational needs of disadvantaged and handicapped learners with a special emphasis on designing, conducting, and evaluating industrial technology and prevocational programs. Buffer.

Au Qtr. 1 2½-hr cl. Prereq: 533, or equiv with written permission of instructor.

836 Practicum in Industrial Arts Education G 3-5

Derivation of doctrine; formulation, and evaluation of basic programs, curriculum development, organizational implementation, leadership problems, and professional progress, both here and abroad. Lux.

Au Qtr. 3 cl. Prereq: Secondary (587) student teaching, or equiv.

837 Research in Industrial Arts Education G 3

Identification of research problems and needs. Review of research exemplars with critical analysis of research design and procedures. Buffer and Ray. Su, Sp Qtrs. 3 cl. Prereq: Ed-Devel 785 and 786, or permission of instructor.

884 Planned Field Experience G 3-15

Planned professional teaching experience in a public school or other educational agency under supervision.

Au, Wi, Sp Qtrs. Prereq: Written permission of area advisor. Repeatable to a maximum of 15 cr hrs.

894 Group Studies G 1-5

Advanced group studies on special problems in education.

Au, Wi, Sp Qtrs. 1 2½-hr cl. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

925 Seminars G 2-5

Research problems in industrial arts education.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl. Prereq: Permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times.

999 Research G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Education: Science and Mathematics

Office: 283 Arps Hall, 1945 North High Street, 422-4121

489 Advanced Field Experience U 3-5

Directed field experience emphasizing appropriate teaching strategies for different school age children and school settings.

2 hrs field experience/cr hr, 1 3-hr seminar. Prereq: Admission to EDP and to the Faculty of Science and Mathematics Teacher Education Program. Repeatable to a maximum of 15 cr hrs; subdivisions not repeatable.

489.01 Middle School-Jr High School Tutorial

Middle or junior high school science or mathematics program with emphasis on tutoring a student(s) in science or mathematics.

Au, Wi Qtrs.

489.02 Elementary School Program

Planning, preparing, and teaching science or mathematics to elementary school age children. Au, Wi Qtrs.

489.03 Secondary School Science or Mathematics Classes and Laboratories

Experience in appropriate secondary school science or mathematics classroom and laboratory with emphasis on acquiring skills to develop, prepare, conduct and evaluate laboratory experiences.

Su, Sp Qtrs. Prereq: 489.02 or permission of instructor; concur 551.

494 Special Group Studies U 1-5

Group Studies for students in specialized programs.

Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

494.26 Teaching of Mathematics**494.27 Teaching of Science****546 Teaching Mathematics in Secondary Schools I U 4**

Mathematical concepts, objectives, and classroom procedures appropriate for secondary schools; selection, preparation, and use of teaching materials including lesson plans, study guides, textbooks, and multisensory aids.

Sp Qtrs. 4 cl. Prereq: Ed-C&F 435, and 20 cr hrs in math.

551 Science in Secondary Schools U 4

Objectives, problems and procedures, preparing teaching plans, use of demonstrations, experiments, and projects, science curriculum and evaluation, instruments and procedures, texts and reference materials.

Au Qtr. 4 cl. Prereq: Permission of faculty chairman or instructor.

587 Student Teaching in Secondary Schools U 3-15

Observation, participation, and responsible teaching in a public school in the greater Columbus area; individual and group conferences or seminars. Students desiring teaching in more than one area should indicate accurately both section numbers and hours in each.

Su, Au, Wi, Sp Qtrs. Prereq: Ed 4th yr standing and written permission of faculty chairman. Repeatable to the required 15 cr hrs. For additional information; see College of Education bulletin.

587.26 Mathematics**587.27 Science****621 Teaching Mathematics in Secondary Schools II U G 4**

Selected problems in curriculum; evaluation, materials of instruction, and the teaching of specific topics in arithmetic, algebra, and geometry.

Au, Wi Qtr. 4 cl. Prereq: 546, and 25 cr hrs in math.

622 Laboratory Methods and Materials in School Mathematics U G 3

The laboratory teaching of mathematics; experience in the preparation and use of teaching materials.

Su, Wi, Sp Qtrs. 1 2½-hr cl. Prereq: Permission of instructor.

627 Practicum in Science for Teachers U G 3

Use and design of apparatus, demonstrations, and experiments for general science, chemistry, biology, and physics, with special emphasis on modern secondary school instructional materials in the sciences.

Au, Wi Qtr. 3 2-hr cl. Prereq: Permission of faculty chairman or instructor.

692 Workshops U G 1-8

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Su, Au, Wi, Sp Qtrs. Cl hrs arr. Prereq: Teaching experience and permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs.

692.26 Teaching of Mathematics**692.27 Teaching of Science****693 Individual Studies U G 1-4**

Su, Au, Wi, Sp Qtrs. Prereq: Ed-C&F 435 or Ed-E&MC 460, and permission of instructor. A total of not more than 30 cr hrs of individual study (any 693) will apply toward graduation for undergrad students, or 45 cr hrs for grad students.

693.26 Teaching of Mathematics**693.27 Teaching of Science****694 Group Studies U G 1-5**

Group studies on special problems in education.

Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

694.26 Teaching of Mathematics**694.27 Teaching of Science****721 Logic and Psychology in School Mathematics U G 3**

A study of the nature of psychological growth and the development of logical ability in children and the implications for teaching mathematics.

Sp Qtr. 3 cl. Prereq: Teaching experience or written permission of instructor. Not open to students with credit for 841.

722 Number Concepts in School Mathematics U G 3

The concept of number systems from the point of view of a teacher who plans to introduce them to students in grades kindergarten through 12.

Su, Au Qtrs. 2 1½-hr. cl. Prereq: Teaching experience or written permission of instructor. Not open to students with credit for 842.

723 Algebraic Concepts in School Mathematics U G 3

Such concepts as algebraic structures, order structures, and relation and function as unifying themes for school mathematics.

Su Qtr. 2 1½-hr cl. Prereq: Teaching experience or written permission of instructor. Not open to students with credit for 843.

724 Geometric and Topological Concepts in School Mathematics U G 4

The historical and contemporary role of geometry in school mathematics; review of research analysis of current programs and the teaching of selected concepts.

Su Qtr. 4 1-hr or 22-hr cl. Prereq: Teaching experience or written permission of instructor. Not open to students with credit for 844.

741 Supervision in School Mathematics Program U G 4

The role of state and local supervisors in the design, implementation, and supervision of school mathematics programs.

4 cl plus observation and participation in selected schools. Prereq: Teaching experience or written permission of instructor. Not open to students with credit for 845.

742 The Supervision of School Science Programs U G 4

For those concerned with supervision of teacher education programs in science; objectives, curricula, recent trends, classroom management, evaluation of teaching, professional literature.

Su Qtr. 4 cl. Prereq: Teaching experience or written permission of instructor. Not open to students with credit for 849.

752 Science in the School Curriculum U G 4

Foundations for science curriculum; current development, planning and evaluation procedures, research.

Su Qtr. 2 2-hr cl. Prereq: Teaching experience or written permission of instructor. Not open to students with credit for 850.

772 Teaching Science in College U G 4

An examination of college science curricula; teaching methods; student and course evaluation techniques; objectives and rationale for teaching science in general education and teacher education programs.

2 2-hr cl. Prereq: Teaching experience or written permission of instructor. Not open to students with credit for 851.

884 Planned Field Experience G 3-15

Planned professional teaching experience in a public school or other educational agency under supervision.

Prereq: Permission of area advisor. Repeatable to a maximum of 15 cr hrs.

884.26 Teaching of Mathematics**884.27 Teaching of Science****894 Group Studies G 1-5**

Advanced group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

899 Interdepartmental Seminar in Teaching College Mathematics G 2-4

Discussion of problems raised by courses for liberal or general education, service courses, or special education courses commonly offered in college mathematics; given cooperatively by Math and Ed-SC&MA. Trimble and Riner.

Sp Qtr. 1 3-hr cl. Prereq: Permission of instructor.

925 Seminars G 2-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times. Research problems in:

925.26 Teaching of Mathematics**925.27 Teaching of Science****999 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

999.26 Teaching of Mathematics**999.27 Teaching of Science**

Educational Special Services

Office: 257 Arps Hall, 1945 North High Street, 422-6554

213 Introduction to Urban Education U 5

Examines the multiethnic character of the urban community and the unique educational problems prospective teachers should be conscious of in order to be more effective when working with minorities. G. Thomas.

Su, Wi Qtrs. 4 cl; 2 hrs field experience arr.

214 Black Perspectives in Urban Education U 3

Examines major educational-philosophical hallmarks that affect the education of black Americans focusing on Booker T. Washington, W.E.B. DuBois, Carter G. Woodson and important legislation. G. Thomas.

Au, Sp Qtrs. 3 cl.

270 Seminar in Career Development U 3

Seminar for examining self in relation to educational and career goals. Focus on self assessment, decision making, identification and use of campus resources, employability and work adjustment skills.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl. Repeatable to a maximum of 9 cr hrs. Entry course recommended for first quarter freshmen.

271 Seminar in Exploring Helping Relationships: Teaching/Learning U 3

Seminar for examining the field experience in helping relationships. Focus on self development, decision making, world of work for students exploring careers through placement in educational and community agency settings.

Au, Wi, Sp Qtrs. 1 3-hr cl. Repeatable to a maximum of 6 cr hrs with special written permission, when unusual circumstances warrant. To be taken concurrently with field experience 289.01.

289 Field Experience U 2-5

Professional service with children or youth in some school or community agency.

Prereq: Permission of instructor.

289.01 Introductory Experience in a School System

Au, Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs, with special permission when unusual circumstances warrant.

289.02 Experience in a Community Agency

Repeatable to a maximum of 20 cr hrs.

289.37 Tutoring

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 20 cr hrs.

294 Group Studies U 1-5

Group studies for students in specialized programs.

Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

294.01 Evaluation of Field Experiences

294.34 Youth-Career Education

413 Experiencing the Urban Community U 3

Provides practicum experiences and discussion designed to bring prospective teachers into direct contact with the life circumstances-- street, stores, homes, school and public agencies of children living in urban areas.

Su, Wi Qtrs. 2 cl; 4 hrs arr. Emphasis will be on preschool through 3rd grade.

513 Cultural Factors Affecting Teachers in Urban Schools U 3

Students examine their own values relative to varying cultural factors; life style, aspirations, language, family, that affect and impede the learning process between teachers and students in urban settings. G. Thomas.

Su, Au, Sp Qtrs. 5 cl.

679 Career Education in the Schools: A Survey U G 3

A survey of career education concepts and programming: the national position, Ohio Career Development Continuum, and local application of several developmental areas of career education; career guidance practices. Quaranta.

Su, Au, Wi, Sp Qtrs. 3 hr lecture/discussion. Prereq: Permission of instructor and student teaching and/or bachelors degree.

692 Workshops U G 1-8

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Teaching experience, and written permission of workshop director.

Repeatable with not more than 4 workshops to a maximum of 12 cr hrs.

692.32 Student Personnel Work

692.34 Guidance and Counseling

693 Individual Studies U G 1-4

A total of not more than 30 cr hrs of individual study (any 693) will apply toward graduation for undergrad students, or 45 cr hrs for grad students.

Su, Au, Wi, Sp Qtrs. Prereq: Ed-C&F 435 or ED-E&MC 460, and permission of instructor.

693.32 Student Personnel Work

693.34 Guidance and Counseling

694 Group Studies U G 1-5

Group studies on special problems in education.

Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

694.32 Student Personnel Work

694.34 Guidance and Counseling

773 Introduction to Guidance Services U G 3

Background and purposes of guidance services; techniques used in studying the individual; informational services; counseling service; placement and follow-up; developing a guidance program.

Su, Au, Wi, Sp Qtrs. Prereq: Ed-C&F 435. Not open to students with credit for 874.

774 Introduction to Counseling U G 3

Introduction to counseling theories with emphasis on theoretical bases and applications in selected school and community settings.

Su, Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: 773. Not open to students with credit for 973.

775 Group Processes U G 3

Theories, issues, trends, and supervised practice.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl. Prereq: Permission of instructor. Not open to students with credit for 875.

776 Guidance Practices in the Elementary School U G 3

The application of guidance concepts and services to the elementary school situation.

Su, Au, Sp Qtrs. 1 2½-hr cl. Prereq: 773. Not open to students with credit for 880.

**777 Guidance Appraisal
Techniques: Nonstandardized U G 3**

Basic concepts and techniques in the appraisal of the individual; nonstandardized methods.

Su, Au, Sp Qtrs. 1 2½-hr cl. Prereq: 773. Not open to students with credit for 877.

**778 Guidance Appraisal
Techniques: Standardized U G 3**

Basic concepts and techniques in the appraisal of the individual; standardized methods.

Su, Au, Wi Qtrs. 1 2½-hr cl. Prereq: 773. Not open to students with credit for 878.

**779 Educational and Vocational
Guidance U G 5**

Theories, instruments, resources for educational and vocational guidance of elementary and secondary students including an analysis of post-secondary school educational opportunities.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl; 1 2-hr lab. Prereq: 773, 778 and written permission of instructor. Not open to students with credit for 879.

**780 Introduction to Student Personnel
Work U G 3**

The nature of and the issues involved in student personnel work in higher education.

Su, Au Qtrs. 2 1½-hr cl.

**781 The Academic Advising
Process U G 2**

An overview of the academic advisement process including practical and philosophical questions about advisement and the role of the adviser.

Wi Qtr. 2 cl. Prereq: Permission of instructor.

**782 The Practice of College Student
Personnel Work U G 3**

First practical course in professional sequence; prerequisite to field work practice; major services are examined and discussed; outstanding practitioners consult on their work.

Au Qtr. 2 1½-hr cl. Prereq: Permission of instructor.

**876 Organization and Administration
of Guidance Services G 3**

The selection, organization, and presentation of guidance materials, including analysis of types of organization, methods of initiating a guidance program, and types of in-service programs.

Su, Au, Wi Qtrs. 3cl. Prereq: 874, or 773, or equiv.

884 Planned Field Experience G 3-15

Planned professional counseling or teaching experience in a public school, college and university, or other agency under supervision.

Prereq: Written permission of area advisor. Repeatable to a maximum of 15 cr hrs.

884.32 Student Personnel Work**884.34 Guidance and Counseling****887 Student Personnel Programs for
the Culturally Different G 3**

A survey of collegiate experimental programs and practices, their philosophies, organization, administration, educational audiences, etc., for the culturally different with emphasis on black Americans.

Au, Sp Qtrs. 1 2½-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs.

**888 Interpersonal Relations in Student
Personnel Work G 3**

Emphasis on laboratory learning process for

interpersonal growth; treatment of group theory, processes, and dynamics.

Wi Qtr. 1 2½-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

894 Group Studies G 1-5

Advanced group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

894.32 Student Personnel Work**894.34 Guidance and Counseling****925 Seminars G 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times.

Research problems in:

925.32 Student Personnel Work**925.34 Guidance and Counseling****926 Student Personnel Work as a
Professional Field G 3**

The principal objective is to provide an opportunity, by a study of current, historical, and philosophical materials, for the formulation of a sound intellectual basis for professional practice in student personnel work.

Sp Qtr. 2 1½-hr cl. Prereq: Permission of instructor.

**930 Internship in College Student
Personnel Work G 6-12**

The student is assigned as a participant-observer in a work situation closely approximating his vocational goal, under the supervision of a qualified practitioner; full-time commitment is normally expected.

Su, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

938† Instruction in Higher Education G 3

A study of the teaching-learning environment in college, including student culture, learning theory and classroom procedure, examinations, and evaluation.

3 cl.

**943 Interaction of the Student and the
College Environment G 3**

A focus on the nature of the college environment, entering student, academic procedures, student performance, and student culture for those planning careers in college student personnel work.

Sp Qtr. 2 1½-hr cl.

**945 Practicum in Student Personnel
Work G 5**

Supervised practicum in campus student personnel agencies such as admissions, dean of students, housing, international students, student financial aids, student union, and undergraduate college offices.

Su, Wi, Sp Qtrs. 1 1½-hr cl; 6 hrs lab in personnel agency arr. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

**954 Theory and Practice of Student
Personnel Administration G 3**

The organization and administration of student personnel services. Organizational theory and approaches to organizational development, in the interest of institutional renewal, are considered.

Au, Wi Qtrs. 1 3-hr cl.

974 Supervised Practice in Individual Counseling: Children G 3

Emphasis on counseling techniques unique to elementary age children including play media and conceptualizing the environmental press on the child. Su, Au, Sp Qtrs. 1 2½-hr cl Prereq: 773, 774 and written permission of instructor. Repeatable to a maximum of 9 cr hrs.

975 Supervised Practice in Group Counseling: Children G 3

Supervision of each enrollee who counsels with a group of children of elementary age in a school or other institutional setting. Wi Qtr. 1 2½-hr cl Prereq: 773, 774 and written permission of instructor. Repeatable to a maximum of 9 cr hrs.

976 Supervised Practicum in Individual Counseling: Adolescent, Youth, and Adult G 3

Supervised practice in counseling individual clients of adolescent to adult age; emphasis on developing counseling skills, including: counseling relationship; conceptualizing clients; self-understanding. Su, Au, Wi, Sp Qtrs. 1 2½-hr cl Prereq: 773, 774 and written permission of instructor. Repeatable to a maximum of 9 cr hrs.

977 Supervised Practice in Group Counseling: Adolescent, Youth, and Adult G 3

Supervision of each enrollee who counsels with a group of adolescents, youths or adults in a school or other institutional setting. Su, Au, Sp Qtrs. 1 2½-hr cl Prereq: 773, 774 and written permission of instructor. Repeatable to a maximum of 9 cr hrs.

978 Supervised Field Experience in Counseling G 3

Supervised practice in guidance and counseling activities in the work setting; emphasis on the range of activities performed by guidance workers in school and related settings.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl Prereq: 773, 774 and written permission of instructor. Repeatable to a maximum of 9 cr hrs.

999 Research G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

999.32 Student Personnel Work**999.34 Guidance and Counseling****260 Typewriting I U 2**

Development of skill in the operation of the typewriter, in producing copy, and in concomitant learnings.

Au, Wi Qtrs. 4 1-hr lab. Open only to business education major and minors; or by permission of the instructor. Required by the 2nd yr of students majoring in business education who lack proficiency required for admission to 266. Placement tests for students having had previous training in typewriting will be given during the first class meetings of 260, 261, and 262; students reporting for placement tests need not be registered in this course.

261 Typewriting II U 2

Continuation of 260 with emphasis on production typing.

Au, Wi, Sp Qtrs. 4 1-hr lab. Prereq: 260. Not open to students with credit for 207.

262 Typewriting III U 2

Continuation of 261.

Wi, Sp Qtrs. 4 1-hr lab. Prereq: 261.

263 Shorthand I U 4

The theory of Gregg shorthand, development of good shorthand writing techniques, the ability to take dictation at increasing rates of speed, and the ability to transcribe using correct punctuation and spelling.

Au, Wi Qtrs. 4 1-hr lab. Prereq: 260. Not open to students with credit for Ed 208. Required no later than the 2nd yr of students majoring in business education who lack proficiency required for admission to 266. Placement tests for students having had previous training in shorthand will be given during first class meeting of 263, 264, 265 and 266; students reporting for placement tests need not be registered in these courses.

264 Shorthand II U 4

Continuation of 263.

Wi, Sp Qtrs. 4 cl; lab arr. Prereq: 263, or equiv. Not open to students with credit for Ed 209.

265 Shorthand III U 4

Continuation of 264.

Au, Sp Qtrs. 4 cl; lab arr Prereq: 264.

266 Advanced Stenography U 4

Continued development of speed and accuracy in shorthand and transcribing, with major emphasis on transcription of mailable letters.

Au, Wi Qtrs. 3 cl; 1 2-hr lab. Prereq: 262 and 265, or equiv. Not open to students with credit for Ed 210. For placement tests in typewriting and shorthand, see 260 and 263.

269 Office Machines U 2

A survey of office machines: calculators, duplicators, transcription machines, word processor; a hands-on application and problems course.

Au, Sp Qtrs.

289 Field Experience in a Community Agency U 2-5

Professional service with children or youth in some school or community agency.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

294 Group Studies U 1-5

Group studies for students in specialized programs.

Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

Education: Vocational-Technical

Office: 160 Ramseyer Hall, 29 West Woodruff Avenue, 422-5037

251 Work Experience in Private Enterprise U 3-6

Occupational competency credit in subject matter field established by comprehensive examination.

Su, Au, Wi, Sp Qtrs. Prereq: Major standing in chosen area and permission of instructor. Repeatable to a maximum of 18 cr hrs.

520 Teaching Typewriting and Office Practice U 3

Objectives, methods, classroom procedures, and materials for teaching typewriting and clerical practices.

Au, Wi, Sp Qtrs. 2 cl. Prereq: 262 or equiv; Ed-C&F 435.

521 Teaching Shorthand and Transcription U 3

Objectives, methods, classroom procedures, materials, and evaluation for teaching shorthand, transcription, and business English.

Au, Wi, Sp Qtrs. 2 cl. Prereq: 265 or equiv; Ed-C&F 435.

523 Teaching Bookkeeping and Office Machines U 3

The objectives, methods, classroom procedures, and materials for teaching bookkeeping and accounting, office machines, and business arithmetic.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Acc 221 and Ed-C&F 435.

524 Teaching Basic Business Subjects U 3

Objectives, methods, classroom, procedures, and materials for teaching general business, business law, consumer economics, and business organization in the high school.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Ed-C&F 435, and 25 cr hrs in geog, econ, and bus admin.

529 Methods of Teaching Distributive Education U 3

Objectives, methods, classroom procedures and materials for teaching distributive education classes.

Su, Au, Wi Qtrs. Prereq: Ed-C&F 435.

570 Office Procedures U G 5

Theory and practice of office management; duties, responsibilities, procedures, and techniques of office work; office machines and equipment.

Au, Sp Qtrs. 1 cl, 3 2-hr labs. Prereq: 262 and 3rd yr standing. Not open to students with credit for 270.

575 Vocational-Technical Teaching U 3-6

Provides teaching methods, techniques, and vocational course organization.

Su, Au, Wi, Sp Qtrs. Prereq: One year vocational teaching certificate in a skilled or technical occupation, or eligibility for such certificate and permission of instructor. Repeatable to a maximum of 24 cr hrs.

587 Student Teaching in Secondary Schools U 3-15

Observation, participation, and responsible teaching in a public school; individual and group conferences or seminars. Students desiring teaching in more than one area should indicate accurately both section numbers and hours in each.

Su, Au, Wi, Sp Qtrs. Prereq: Ed 4th yr standing. Repeatable to the required 15 cr hrs. For additional information, see College of Education bulletin.

587.22 Trade and Industrial Education**587.23 Business Education****587.29 Distributive Education****601 Business and Office Education Programs U G 3**

Organization, implementation, evaluation, and improvement of vocational office education programs on the secondary school level; required of all business education majors. Santos.

Su, Au Qtrs. 2 cl. Prereq or concur: 520, or 521, or 523, or equiv.

602 Cooperative Office Education U G 3

A study of new approaches to organization, operation, and supervision of the Cooperative Office Education Program and the understanding and evaluation of the recent thrust in vocational education and work-study programs.

Su, Au Qtrs. 3 cl. Prereq: 520, or 523, or equiv.

605 Curriculum Content for Distributive Occupational Subjects U G 3

Securing, evaluating, and organizing instructional material and experiences for distributive cooperative education and adult extension courses. Vivian.

Sp Qtr. 3cl. Prereq: 529.

606 The Function and Structure of Distributive Education Programs U G 3

The organization of high school, postsecondary, and adult distributive education programs and their administration on local, state, and national levels. Vivian.

Su, Wi Qtrs. 1 2½-hr cl. Prereq: Ed-C&F 435.

608 Practicum in Distributive Education U G 2-3

Directed employment in a retail, wholesale, or service business previously approved by the student's adviser. Vivian.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs.

609 Evolution of Vocational Education U G 3

Introduction to the development of vocational education including consideration of influences affecting legislation, federal acts, and basic concepts which have evolved. Miller.

Su, Au Qtrs. 1 2½-hr cl. Prereq: Permission of instructor.

646 Coordination of Cooperative Vocational-Technical Education Programs U G 3

Designed to develop the knowledges, attitudes, and competencies to operate effectively a cooperative vocational-technical education program. Vivian.

Su, Au, Sp Qtrs. 1 2½-hr cl. Prereq: Ed-C&F 435, or equiv.

649 Vocational-Technical Education for Out-of-School Youth and Adults U G 3

Philosophy, facilities, subject matter, instructional methods, teacher education, supervision, coordination; records and reports, types of programs and relationships.

Au Qtr. 1 2½-hr cl. Prereq: 575 or equiv, and permission of instructor. Teaching or supervising experience required for graduate credit.

656 Shop and Laboratory Organization and Management U G 3

Designed to help vocational and technical teachers to plan, organize and manage vocational shops and technical laboratories used in various educational settings. Riley.

Au Qtr. 1 2½-hr cl.

657 Occupational Analysis U G 3

The development of methods and procedures used in analyzing a technical occupation for teaching content; the sequencing of instructional elements into logical components for a vocational course of study. Sage.

Wi Qtr. 1 2½-hr cl.

672 Introduction to Adult Education U G 3

The nature, extent, and significance of adult education; history and types of adult education; theoretical issues; adult learning and methodology; present trends and future developments.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing; for ed majors; Ed-C&F 435 or Ed-E&MC 461.

673 Parent Education U G 3

Nature, extent, and significance of the parent education movement; home and school relationships; methods and resources; training professionals and lay leaders; local and state programs. Dowling.

Su, Wi Qtrs. One 2½-hr cl. Prereq: 4th yr standing; for ed majors; Ed-E&MC 461 or Ed-C&F 435.

692 Workshops U G 1-8

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Su, Au, Wi, Sp Qtrs. Cl hrs arr. Prereq: Teaching experience, and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs.

692.22 Trade and Industrial Education

692.23 Business Education

692.29 Distributive Education

692.30 Vocational-Technical Education

692.33 Adult Education

693 Individual Studies U G 1-4

Su, Au, Wi, Sp Qtrs. Prereq: Ed-C&F 435 or Ed-E&MC 460, and written permission of instructor. A total of not more than 30 cr hrs in individual study (any 693) will apply toward graduation for undergrad students, or 45 cr hrs for grad students.

693.22 Trade and Industrial Education

693.23 Business Education

693.29 Distributive Education

693.30 Vocational-Technical Education

693.33 Adult Education

694 Group Studies U G 1-5

Group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

694.22 Trade and Industrial Education

694.23 Business Education

694.29 Distributive Education

694.30 Vocational-Technical Education

694.33 Adult Education

730 Supervision of Vocational Instruction U G 3

Applies principles of instructional supervision in vocational education program settings at both secondary and post-secondary levels. Supervision applications are consistent with state plans for vocational education. Miller.

Wi Qtr. 1 2½-hr cl. Prereq: 609 or equiv and written permission of instructor.

730.22 Trade and Industrial Education

730.23 Business Education

730.29 Distributive Education

730.30 Vocational-Technical Education

800 Principles in Business Education G 3

Meaning, purpose, and scope of the business education program; analysis of principles and fundamental issues. Hillestad.

Su, Au Qtrs. 1 2½-hr cl. Open only to grad students majoring in business education, distributive

education, or vocational education, or permission of instructor.

801 Organization and Teaching of Typing and Office Practice G 3

The purposes, content, organization, materials, and methods of evaluation for typing and office practice courses; office practice as a part of an intensive vocational curriculum. Hillestad.

Su, Sp Qtrs. 3 cl. Prereq: Teaching experience or permission of instructor.

802 Administration and Supervision of Business Education G 3

Administrative problems in business education related to program, facilities, placement and follow-up of graduates, public relations, and federal-state reimbursement. Santos.

Su Qtr. 1 2½-hr cl. Prereq: Grad status in business or vocational education, or permission of instructor.

803 Improvement of Instruction in Basic Business Subjects G 3

A study of objectives, methods, materials, and methods of evaluation for courses such as general business, consumer education, and business law.

Wi Qtr. 3 cl. Prereq: 524 or equiv.

804 Improvement of Instruction in Bookkeeping and Data Processing G 2

Evaluation of the content, materials, and methods of teaching bookkeeping, accounting, and data processing on the secondary and postsecondary school levels. Santos.

Su, Sp Qtrs. Prereq: 523, or equiv.

805 Improvement of Instruction in Shorthand G 2

Teaching procedures basic to the development of vocational proficiency in typewriting, shorthand, and transcription; available instructional materials, evaluation, standards of achievement. Hillestad.

Su, Sp Qtrs. 2 cl. Prereq: Teaching experience or permission of instructor.

807 Survey of Vocational Education G 3

A survey of vocational-technical education, vocational guidance, and industrial arts. Vivian.

Su, Au Qtrs. 1 2½-hr cl. Prereq: Ed-C&F 435, or equiv. Open to vocational educators, school administrators, and other graduate students who desire information about vocational education.

884 Planned Field Experience G 3-15

Planned professional teaching experience in a public school or other educational agency under supervision.

Prereq: Written permission of area advisor. Repeatable to a maximum of 15 cr hrs.

884.22 Trade and Industrial Education

884.23 Business Education

884.29 Distributive Education

884.30 Vocational-Technical Education

884.33 Adult Education

894 Group Studies G 1-5

Advanced group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

894.22 Trade and Industrial Education

894.23 Business Education

894.29 Distributive Education

894.30 Vocational-Technical Education**894.33 Adult Education****925 Seminars G 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Students with permission of advisors may register for more than one section of 925 or for the same section two or more times.

925.22 Trade and Industrial Education**925.23 Business and Office Education****925.29 Distributive Education**

Vivian.

925.30 Vocational-Technical Education

Miller

925.33 Adult Education**931 General Methods in Adult Education G 03**

The uses and adaptations of various methods and techniques for teaching adults. Dowling.

Su, Wi Qtrs. 1 2½-hr cl. Prereq: Written permission of instructor.

932 Adult Characteristics and Learning Theory G 3

Examination of significant learning theories and their applicability to adult learning experiences. Dowling.

Su, Sp Qtrs. 1 2½-hr cl. Prereq: 672.

933 Internship in Adult Education G 9

Dowling.

Su, Au, Wi, Sp Qtrs. Prereq: 672, and 12 cr hrs of grad work in adult education. Repeatable to a maximum of 18 cr hrs. Limited to PhD majors in adult education and selected master's candidates with major in adult education.

934 Organization and Administration of Adult Education Programs G 3

The administrative functions within adult education agencies: decision making, staff development, financing, evaluating, and improving adult education programs.

Au, Sp Qtrs. One 2½-hr cl. Prereq: 672, and written permission of instructor.

935 Program Planning in Adult Education G 3

Prepares educators to implement components in planning educational programs for adults: assessing needs, setting objectives, selecting and training staff, choosing instructional strategies, promotion, and evaluation.

Au Qtr. 1 3-hr cl. Prereq: 672 or equiv.

999 Research G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. Refer to decimal subdivisions under 925.

Electrical Engineering

Office: 205 Electronics Laboratories, 2015 Neil Avenue, 422-2572

201 Circuit Analysis I U 3 or 4

Resistance networks; independent and dependent

sources; R, L, C terminal relations; transient response; operational impedance and transfer functions.

Au, Wi, Sp Qtrs. 3 or 4 cl. Prereq: Math 153 and Physics 133.

202 Circuit Analysis II U 3 or 4

Operational methods; sinusoidal and exponential excitation; phasors; power and energy; resonance; poles and zeros; mutual coupling; Fourier series.

Au, Wi, Sp Qtrs. 3 or 4 cl. Prereq: 201.

206 Switching Circuits Lab U 2

NAND, NOR, XOR gates; combinational circuits; adders, code converters. Flip flops: sequential circuits; shift registers, counters.

Au, Wi, Sp Qtrs. 1 cl, 1 3-hr lab. Prereq or concur: 260.

207 Circuits Laboratory I U 2

Basic electrical measuring instruments, investigation of various waveforms in R, L, C circuits, transient response, frequency response, polyphase circuits.

Au, Wi, Sp Qtrs. 1 cl, 1 3-hr lab. Concur: 202.

208 Circuits Laboratory II U 2

Investigation of properties of the basic circuit elements, periodic non-sinusoidal waveforms, harmonic analysis, nonlinear circuits.

Au, Wi, Sp Qtrs. 1 cl, 1 3-hr lab. Prereq: 207.

260 Introduction to Switching Theory U 3

Introduction to combinational switching theory, Boolean algebra, and clocked sequential networks.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Math 151. Not open to students with credit for 660.

293 Individual Studies in Electrical Engineering U 1-15

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

294 Group Studies in Electrical Engineering U 1-15

Su, Au, W, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

350 Signals and Systems I U 3 or 4

Linear systems and models; convolution and impulse response for discrete and continuous time; state variables; Fourier series, Fourier, Laplace and Z transforms.

Au, Wi, Sp Qtrs. 3 or 4 cl. Prereq: 202 and Math 415.

400 Basic Electronics U 5

Introduction to circuits, devices, and instrumentation with emphasis on practical applications.

Au Qtr. 3 cl, 2 2-hr lab. Prereq: Math 150, Physics 112, and permission of instructor. Not open to students in College of Engineering.

417 Electromagnetics Laboratory U 1

Transmission line parameters; attenuation, magnitude and phase of voltage and current on lines; reflected waves; waveguide characteristics and techniques; antenna patterns and impedances; optical devices.

Au, Sp Qtrs. 1 3-hr lab. Concur: 512.

427 Electronic Devices and Circuits Laboratory I U 2

Transistor characteristics, large and small signal parameters, transistor bias and amplifier circuits, operational amplifiers, logic circuits, waveform generation.

Au, Sp Qtrs. 1 cl, 1 3-hr lab. Prereq: 522.

428 Electronic Devices and Circuits Laboratory II U 2

Power amplifiers, push-pull amplifiers, power regulation, SCR characteristics, SCR circuits. Au, Sp Qtrs. 1 cl, 1 3-hr lab. Prereq: 522; concur 523.

447 Electrical Energy Conversion Laboratory I U 2

Characteristics of transformers, direct current and alternating current electromechanical energy conversion devices; inspection of power system facilities.

Au, Wi, Sp Qtrs. 1 cl, 1 3-hr lab. Concur: 541.

457 Signals and Systems Laboratory U 2

Laboratory study of signal processing, control systems and their components, operational amplifiers, and analog computers.

Au, Wi, Sp Qtrs. 1 cl, 1 3-hr lab. Concur: 550.

489 Professional Practice in Industry U 2

Preparation of a comprehensive report based on actual employment experience in a co-op job in industry.

Su, Au, Wi, Sp Qtrs. Prereq: Admission to co-op program in elec eng. Repeatable to a maximum of 8 cr hrs.

500 Electrical Engineering U 4

Introduction to circuit analysis; circuit analysis concepts and their extension to mechanical and thermal systems by analogy; electrical instruments and measurements.

Au, Wi, Sp Qtrs. 3 cl, 3-hr lab. Prereq: Physics 133, and Math 254.

510 Field Theory I U G 3 or 4

Vector relations, static electric fields, dielectric materials, boundary conditions, boundary value problems, field mapping, steady electric currents and their magnetic fields, and ferromagnetic materials.

Au, Wi Qtrs. 3 or 4 cl. Prereq: 202, Physics 133 and Math 415.

511 Field Theory II U G 3 or 4

Time changing electric and magnetic fields, induced fields, displacement current, Maxwell's equations, plane waves, Poynting vector, energy relations and polarization.

Wi, Sp Qtrs. 3 or 4 cl. Prereq: 510.

512 Transmission and Radiation U G 3 or 4

General transmission theory, infinite line, terminated line, impedance transformation, rectangular waveguides, group and phase velocity, wave propagation, radiation and optical applications.

Au, Sp Qtrs. 3 or 4 cl. Prereq: 511.

520 Electronic Devices and Controls U 4

Theory and applications of semiconductors, transistors, photoelectric, vacuum and gas filled tubes. Study of control circuits, feedback, amplifiers, oscillators, filters, magnetic amplifiers, and instrumentation.

Au, Wi, Sp Qtrs. 3 cl, 3-hr lab. Prereq: 500.

521 Electronic Devices and Circuits I U G 3 or 4

First of a sequence of two electronics courses including diodes and transistor electrical characteristics, diode circuits, transistor bias and amplifier circuits, and operational amplifiers.

Au, Wi Qtrs. 3 or 4 cl. Prereq: 202.

522 Electronic Devices and Circuits II U G 3 or 4

A continuation of 521 including digital circuits, waveform generation, and computer aided design. Wi, Sp Qtrs. 3 or 4 cl. Prereq: 521.

523 Power Electronic Devices and Circuits U G 3 or 4

Power amplifiers, push-pull amplifiers, power regulation, SCR characteristics, and SCR circuits. Au, Sp Qtrs. 3 or 4 cl. Prereq: 522.

540 Electrical Engineering U 3

Electromechanical devices; an introduction to the basic principles of analysis of electromechanical devices; the approach is organized to extend the circuit concepts and dynamic analysis introduced in the preceding course.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 500 or equiv.

541 Energy Conversion and Power Systems U G 4

Three-phase systems, energy conversion principles, transformers, basic concepts of rotating machines, introduction to power systems, components, steady-state and transient operation, insulation, grounding.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 202 and 510.

550 Signals and Systems II U G 3 or 4

Fourier and Laplace transforms, impulse, convolution; feedback systems, block diagrams, signal-flow graphs, stability, frequency response, pole-zero analysis, and application to computers and control.

Au, Wi, Sp Qtrs. 3 or 4 cl. Prereq: 350.

570* Bio-Medical Engineering Analysis for Non-Engineers U G 3

Basic concepts and techniques used in analyzing physical and bio-medical systems.

Au Qtr. 3 cl. Prereq: Math 150 or equiv with written permission of instructor. Not open to students in College of Engineering.

571* Bio-Medical Engineering Electronics for Non-Engineers U G 3

Fundamentals of solid state electronics; applications to the life science field with emphasis on limitations and laboratory uses.

Sp Qtr. 3 cl. Prereq: 500 or 570. Not open to students in College of Engineering.

572* Bio-Medical Engineering Systems for Non-Engineers U G 3

Continuation of 570; techniques for modeling and analyzing bio-medical systems, including control systems.

Wi Qtr. 3 cl. Prereq: 570 or equiv. Not open to students in College of Engineering.

580 Professional Aspects of Electrical Engineering U 1

Employment problems of graduating seniors, professional aspects of engineering and professional societies and ethics; discussion of employment practices.

Au Qtr. 1 cl.

601 Communication Theory U G 3

Theory of communication, information content, frequency spectra, noise, methods of modulation, modulators, and demodulators.

Au, Wi Qtrs. 3 cl. Prereq: 350.

607 Electrical Laboratory U G 2

Laboratory in the areas of logic circuits, communication theory, and active circuits.
Au, Wi, Sp Qtrs. 1 cl, 1 3-hr lab. Concur: 601.

610 Applied Electromagnetics I U G 3

Rectangular and cylindrical waveguides; hybrid tee, iris, directional coupler, and other waveguide devices; design considerations. Peake.

Au Qtr. 3 cl. Prereq: 512.

611 Applied Electromagnetics II U G 3

Radio and antenna parameters, array theory; aperture radiation; geometrical optics; Babinet's principle; antenna impedance; frequency independent antennas. Peters.

Wi Qtr. 3 cl. Prereq: 512.

612 Applied Electromagnetics III U G 3

Radio astronomy, brightness temperature, noise, radio telescopes, radio sources, tropospheric propagation, magnetoionic theory, ionospheric propagation, millimeter wave, and optical propagation. Levis.

Sp Qtrs. 3 cl. Prereq: 512

617* Applied Electromagnetics Laboratory U G 1

Electromagnetic measurement techniques; microwave sources and detectors; waveguides and waveguide devices; antenna patterns and impedance. Thiele.

Wi Qtr. 1 3-hr lab. Prereq: 417; prereq or concur 611.

621 Electronic Devices and Circuits III U G 3

Intermediate electronics for advanced undergraduate or graduate students; in depth examination of circuit models, analysis methods, and design procedures useful for linear and digital electronics. Gottling.

Au Qtr. 3 cl. Prereq: 522 or equiv with written permission of instructor.

622 Electronic Devices and Circuits IV U G 3

Continuation of 621 with special emphasis on applications of operational amplifiers, tuned circuits, and logic circuits. Gottling.

Wi Qtr. 3 cl. Prereq: 621 or equiv with written permission of instructor.

623 Introduction to Physical Electronics U G 3 or 4

Physical electronics principles, statistical distributions, conduction, diffusion, energy bands in solids, potential distribution, photoelectric effects, and their application to electron devices.

Au, Sp Qtrs. 3 or 4 cl. Prereq: 510, 522, and Math 415.

626 Audio Recording Engineering U G 3

Audio recording; microphones and microphone placement; multiple track recording; mixing; equalization and special effects.

Wi Qtr. 3 cl. Prereq: 521 or equiv with written permission of instructor.

627 Audio Recording Laboratory U G 2

Creating an audio recording; familiarity with the recording studio and console; use of microphones; multiple track recording; equalization and special effects; mixing.

Sp Qtr. 1 cl, 1 3-hr lab. Prereq: 626 or equiv with written permission of instructor. Repeatable to a maximum of 6 cr hrs.

631 Electron Device Physical Theory I U G 3 or 4

Structure of the solid state; junction diode theory; thermionic emission, photoeffects, transport properties. Gottling.

Wi Qtr. 3 or 4 cl. Prereq: 623 or equiv with written permission of instructor.

632 Electron Device Physical Theory II U G 3 or 4

Transistor theory and models, dielectrics, piezoelectrics, ferroelectrics, theory and applications of magnetic materials. Gottling.

Sp Qtr. 3 or 4 cl. Prereq: 631.

637 Solid State Microelectronics Laboratory I U G 4

Introduction to laboratory techniques including oxidation, chemical processes, photolithography, diffusion and metalization; fabrication and measurements of p-n junction planar diodes.

Au Qtr. 1 cl, 2 4-hr labs. Prereq: 623 or equiv with written permission of instructor.

638 Solid State Microelectronics Laboratory II U G 4

Design and fabrication of solid state devices including light emitting diodes, solar cells, MIS capacitors, charge-coupled devices, MIS transistors, junction bipolar transistors and small scale integration techniques.

Wi Qtr. 1 cl, 2 4-hr labs. Prereq: 637.

640 Industrial/Commercial Power Systems U G 3

An introduction to power system design for commercial buildings and industrial plants. Legal and economic considerations; equipment specifications and ratings, design practice. Hodge.

Wi Qtr. 3 cl. Prereq: 540 or 541.

641 Industrial/Commercial Power Systems II U G 3

Continuation of 640; fault calculations; protection and coordination; grounding; illumination design; electrical heating; lightning protection. Hodge.

Sp Qtr. 3 cl. Prereq: 640 or equiv with permission of instructor.

643 Electrical Machines U G 3

Magnetic circuits, transformers, engineering considerations of rotating machines, direct current machines, alternating current machines. Mathis.

Au Qtr. 3 cl. Prereq: 541.

645 Engineering Economics and Applications to Power Systems U G 3

Basic financial-mathematical concepts, methods of engineering economics, comparison of alternative plans, economics of electric power generation, transmission and distribution, case studies and examples. Sebo.

Au Qtr. Prereq: 541.

647 Electrical Energy Conversion U G 2

Characteristics of general magnetic networks and transformers; steady-state and transient operation of electromechanical energy conversion devices, inspection of electric power systems and machinery facilities. Smith and Sebo.

Au Qtr. 1 cl, 1 3-hr lab. Prereq or concur: 643 or 740.

661 Switching Circuit Design U G 3

An introduction to digital circuit design using integrated circuit technologies: gates, latches, ALU, shift registers, multiplexers, memories. Breeding. Wi Qtr. 3 cl. Prereq: 521 or equiv with written permission of instructor.

670 Introduction to Bio-Medical Engineering U G 3

Introduction to the engineering aspects of life science, utilizing lectures from engineering, medical, and life science staff.

Au Qtr. 2 cl, 1 3-hr lab. Prereq: 4th yr engr or permission of instructor.

693 Individual Studies in Electrical Engineering U G 1-18

Su, Au, Wi, Sp Qtrs.. Repeatable to a maximum of 18 cr hrs.

694 Group Studies in Electrical Engineering U G 1-18

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 18 cr hrs.

700* Advanced Circuits U G 3

Introduction to network synthesis. W. Davis. Wi Qtr. 3 cl. Prereq: 350.

702 Communications Systems U G 3

A study of communications systems with emphasis on signal-to-noise characteristics of various modulation and coding techniques. W. Davis.

Wi, Sp Qtrs. 3 cl. Prereq: 601.

703 Space Communications U G 3

A study of space communication systems; long-distance transmission, wave propagation, and system considerations. D. Davis and Peake.

Sp Qtr. 3 cl. Prereq: 601.

704 Radar Systems U G 3

A study of radar systems including applications of modulation and detection theory; includes ranging, tracking, mapping, and guidance and navigation systems. D. Davis.

Au Qtr. 3 cl. Prereq. or concur: 601.

705 Digital Communication Systems U G 3

Principles of digital data communications; baseband signals; optimization and equalization; modulation system. Lackey.

Au Qtr. 3 cl. Prereq: 550 or equiv with written permission of instructor.

710* Microwave Circuits U G 3

Advanced waveguides, waveguide devices, amplifiers, generators and detection devices; special microwave techniques. Peake.

Au Qtr. 3 cl. Prereq: 719. Not open to students with credit for 610.

711* Radiation from Antennas U G 3

Dipole, loop, aperture, reflector, lens, surface wave, and other antennas; array theory; radiation resistance, directivity, and input impedance. Kraus.

Wi Qtr. 3 cl. Prereq: 719. Not open to students with credit for 611.

712* Microwave Optics U G 3

Geometrical optics, physical optics, aperture radiation integrals, minimum range requirements, stationary phase, sidelobes, backlobes, aperture

blocking, radar echo area, geometrical theory of diffraction, and gyrotropic media. Peters.

Au Qtr. 3 cl. Prereq: 719.

713* Elements of Radio Wave Propagation U G 3

Practical calculations and procedures for predicting refraction and reflection by a plane or spherical earth; tropospheric, ionospheric, and scatter propagation. Levis.

Sp Qtr. 3 cl. Prereq: 719. Not open to students with credit for 612.

716 Electromagnetic Theory of Optical Devices U G 3

Derivation of geometrical optics from Maxwell's equations, diffraction theory, optical spatial filtering, holography, optical resonators, and propagation through a turbulent atmosphere. Collins.

Sp Qtr. 3 cl. Prereq: 202 and 719.

719 Electromagnetic Field Theory I U G 3

Fundamental laws of electrodynamics; dielectric, magnetic, and conductive media; energy, force and momentum; radiation, scattering, and dispersion; interior boundary value problems. Ko.

Su, Au, Wi Qtrs. 3 cl. Prereq: 512 or equiv.

720 Circuit Theory of Solid State Devices U G 3

Advanced circuit theory of solid-state devices. Cornetet and Thurston.

Wi Qtr. Prereq: 522.

721 Advanced Electronic Circuits U G 3

Integrating and differentiating circuits; counting circuits; timing circuits; pulse circuits; wave-forming and wave-shaping circuits. Battocletti and Cornetet.

Sp Qtr. Prereq: 522.

722 Active Network and Logic Circuit Design by Digital Computer U G 3

Study of computer aided network design programs, topological matrices; active device modeling; linear and nonlinear solutions; logic circuit analysis and design by digital computer. Battocletti.

Au, Sp Qtrs. 3 cl. Prereq: 522.

727 Solid State Device Laboratory U G 2

Laboratory study of solid-state devices. Battocletti.

Wi Qtr. 1 cl, 1 3-hr lab. Prereq: 427; prereq or concur: 720.

728 Advanced Electronic Circuits Laboratory U G 2

Laboratory study of integrating and differentiating circuits; counting circuits; timing circuits; pulse circuits; wave-forming and wave-shaping circuits. Cornetet.

Sp Qtr. Prereq: 427; prereq or concur: 721.

732 Quantum Electron Devices U G 4

Interaction of radiation with atomic systems, theory of laser oscillation, electro-optic effects, propagation of laser beams, optical resonators, specific laser systems. Hsu.

Sp Qtr. 4 cl. Prereq: Math 415 or equiv.

733 Parametric Electronics and Nonlinear Optics U G 3

Coupled mode theory of wave interactions; acousto-optical devices; nonlinear optical phenomena; optical parametric processes; tunable optical oscillator; high power laser interactions. Hsu.

Wi Qtr. 3 cl. Prereq: 512; Math 415 and 416; or equiv.

734*† Solid State Electronics Design and Technology I U G 3

Discrete and planar electronic device design and associated silicon and germanium technology; semiconductor crystal growth; liquid-solid transformations; epitaxy, oxidation, diffusion, p-n junctions, planar diodes, and transistors. Middleton. Wi Qtr. 3 cl. Prereq or concur: 522 or permission of instructor.

735*† Solid State Electronics Design and Technology II U G 3

Si junction and surface FET, MOS devices; integrated active and passive device design; integrated circuit design and fabrication; photolithography; wafer processing and control testing; assembly; packaging. Middleton.

Sp Qtr. 3 cl. Prereq: 734.

737*† Solid State Electronics Design and Technology Laboratory U G 3

Fundamental experiments in solid state semiconductor and energy conversion electronics; conductivity, Hall coefficient; magneto-resistance; drift mobility; diffusion; lifetime; p-n junctions; crystal growth; thermoelectric and optical properties. Middleton.

Au, Wi, Sp Qtrs. 2 3-hr lab. Prereq: 521 or permission of instructor. Repeatable to a maximum of 9 cr hrs.

740 Electric Power Systems I U G 3

A study of steady state operation of electric power systems; network concepts, power network representations; network solutions with matrix methods; asymmetrical systems; control of voltages, watts and vars; load-flows; economic dispatch. Sebo and Smith.

Au, Sp Qtrs. 3 cl. Prereq: 541.

741 Electric Power Systems II U G 3

The methods and devices used in systems protection; protection systems, relay types, pilot wire and carrier systems, relay response; protection of machines, transformers, buses, and lines; instrument transformers; modern trends in protection. Sebo and Smith.

Wi Qtr. 3 cl. Prereq: 740.

742 Electric Power Systems III U G 3

A study of transient operation of electric power systems: circuit breakers, circuit interruption, switching transients, traveling waves, insulation coordination, and stability. Sebo.

Sp Qtr. 3 cl. Prereq: 740.

743 Advanced Theory of Electrical Machines U G 3

Matrix representation, steady-state and transient analysis of transformers; d-c, induction, synchronous, and special machines. Mathis.

Wi Qtr. 3 cl. Prereq: 643.

744 Electrical Machine Design U G 3

Principles and practices of electrical machine design with emphasis on design of windings and magnetic circuits. Mathis.

Sp Qtr. 3 cl. Prereq: 643.

747 High Voltage Laboratory I U G 2

A laboratory study of high-voltage insulation. Sebo.

Au Qtr. 1 cl, 1 3-hr lab. Prereq: 541.

748 Power System Laboratory U G 2

A laboratory study of power system engineering problems. Smith.

Sp Qtr. 1 cl, 1 3-hr lab. Prereq: 740.

749 High Voltage Laboratory II U G 2

Laboratory study of high voltage impulse testing techniques. Smith.

Wi Qtr. 1 cl, 1 3-hr lab. Prereq: 747.

750 Linear System Theory U G 3

Writing system equations for electrical, mechanical, and mixed systems with lumped parameters; solution by means of transform methods and time-domain methods. McGhee.

Su, Au, Wi Qtrs. 3 cl. Prereq: 550.

751 Open Cycle Control and Instrumentation U G 3

Engineering analysis and design applied to selected practical problems in the fields of sensors, measurement, signal handling, and systems as parts of overall control problems. Weed.

Sp Qtr. 3 cl. Prereq: 541, and concur 550; or 520 and 540 with permission of instructor.

752 Feedback Control Systems I U G 3

Application of feedback principles to control systems, system equations; performance criteria; compensation, carrier systems, multivariable systems. Weimer.

Au, Wi Qtrs. 3 cl. Prereq: 550.

754 Feedback Control Systems II U G 3

Analysis of nonlinear control systems; computer simulation, numerical methods, phase-plane techniques, describing functions, and switched systems. Fenton.

Sp Qtr. 3 cl. Prereq: 550.

755 Digital Control Systems U G 3

Difference equations, z-transforms, digital filtering, sampling quantization, analog-digital conversion; block diagramming to model digital and hybrid control systems. Fenton.

Wi Qtr. 3 cl. Prereq: 550.

757 Control Systems Laboratory I U G 2

Experiments chosen by student interest from the course content of open cycle and instrumentation and feedback control systems. Weimer.

Wi Qtr. 1 cl, 1 3-hr lab. Concur: 751 or 752.

758* Control Systems Laboratory II U G 2

Experiments chosen by student interest from the course content of magnetic amplifiers, feedback control systems, and digital control systems. Weimer.

Sp Qtr. 1 cl, 1 3-hr lab. Concur: 753, 754, or 755. May be taken without 757.

760 Theory and Design of Digital Computers U G 3

Number systems, introduction to computer programming, design of arithmetic and control units for general purpose digital computers, and interrelation of hardware and software system design. Breeding.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 260, and 521 or CIS 543.

761 Switching Circuit Theory U G 3

State minimization, asynchronous sequential machines, the state assignment problem, transient analysis of combinational switching networks, linear sequential networks, and threshold logic. McGhee.

Wi, Sp Qtrs. 3 cl. Prereq: 260 and 521 or CIS 675 or equiv with written permission of instructor.

762 Information Theory U G 3

Introduction to information theory; codes, sources, and transmission over noisy channels. D. Davis and Lackey.

Wi Qtr. 3 cl. Prereq: 260 or equiv with written permission of instructor.

763 Hybrid Computation U G 3

Introduction to combined analog-digital techniques; hybrid system components; error analysis; hardware and software. Lackey.

Au Qtr. 3 cl. Prereq: 550 and CIS 241 or equiv.

764 Digital Signal Processing U G 3

Transmission of information, conversion to digital form, and conventional analysis methods; processing techniques including complex exponentials and Walsh/Haar Transform theory; generalized Fourier Transform. Lackey.

Sp Qtr. 3 cl. Prereq: 550.

765 Minicomputer and Microcomputer Structures U G 3

An investigation of current mini- and microcomputer structures with emphasis on hardware implementation of I/O, direct memory access, interrupts, memory, micro programming. Breeding.

Au Qtr. 3 cl. Prereq: 760.

767 Digital Logic Laboratory U G 2

A self-paced laboratory involving the design of basic computer components such as registers, arithmetic logic units, counters, and the design of sequential machines. Olson.

Au, Wi, Sp Qtrs. 1 cl, 1 3-hr lab. Concur: 760.

768 Digital Systems Laboratory U G 3

A self-paced, hardware-oriented laboratory in which students design, construct and test interfaces of peripheral devices to a PDP 11-10 minicomputer. Olson.

Sp Qtr. 3 cl. Prereq: 767.

769 Microprocessor Laboratory U G 3

Open shop design laboratory in which students design, construct, debug, and program microprocessor systems based on currently available microprocessors, memories, I/O devices, etc.

Au, Sp Qtrs. 1 cl, 1 3-hr lab. Prereq: 661, 765, or equiv with permission of instructor.

770 Biological Control Systems U G 3

Application of control theory to the analysis of biological control systems such as visual, muscular, thermal, and cardiovascular; receptor, nerve axon, and muscle transfer characteristics. Campbell.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: 550 or equiv; 670 and permission of instructor or Physiol 600.

771 Bio-Medical Instrumentation U G 3

Application of electrical engineering to instrumentation, monitoring, and signal and data handling in bio-electrical measurements; consideration of implants, heart pacers, electrocardiograms and electroencephalographs, and speech analysis. Campbell.

Wi Qtr. 2 cl, 1 3-hr lab. Prereq: 520 or 522; 670 and permission of instructor or Physiol 600.

772 Clinical Bio-Medical Engineering U G 3

Classroom and hospital investigation of clinical engineering problems such as EEG, EKG, catheter measurements, spectral analysis, pacemakers, electrical safety. Campbell and Weed.

Sp Qtr. 1 cl, 2 3-hr lab. Prereq: 771, Med 797, or equiv with written permission of instructor.

793 Individual Studies in Electrical Engineering U G 1-18

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 18 cr hrs.

802†* Network Synthesis I G 3

Modern theory of network synthesis with applications to advanced design of filters, equalizers, and compensators. W. Davis and Warren.

Sp Qtr. 3 cl. Prereq: 750 and Math 552.

803†* Network Synthesis II G 3

Continuation of 802. W. Davis and Warren.

Au Qtr. 3 cl. Prereq: 802.

804 Communication Theory I G 3

The application of Fourier series and Fourier integral methods of the design and analysis of communication circuits and signals. W. Davis and Warren.

Au Qtr. 3 cl. Prereq: 350 or equiv with written permission of instructor.

805 Communication Theory II G 3

The application of statistical methods to problems in communication systems including signal representation, modulation, detection, and filtering. W. Davis and Warren.

Wi, Qtr. 3 cl. Prereq: 804 and Stat 520.

806 Communication Theory III G 3 or 4

Topics selected from the communication applications of statistical decision-theory, signal representation, optimal filtering, and other matters of current interest. Warren.

Sp Qtr. 3 or 4 cl. Prereq: 805.

807* Advanced Communication Theory I G 3

Application of estimation theory to problems in communications; signal extraction, continuous and discrete waveform filtering, prediction and interpolation, Kalman filtering, sequential search. Compton.

Au Qtr. 3 cl. Prereq: 805.

808* Advanced Communication Theory II G 3

Time-discrete communication systems, PAM, PSK, phase coherent and differentially coherent detection orthogonal signals, bit, symbol, word error probabilities, phase estimators acquisition, nonsinusoidal signals. Compton.

Wi Qtr. 3 cl. Prereq: 807.

809* Advanced Communication Theory III G 3

Synchronization, sinusoidal and nonsinusoidal clock signals, pseudonoise and rapid acquisition sequences, PAM and PSK symbol synchronization, carrier synchronization, Costas loop and squaring loop performance. Huff.

Sp Qtr. 3 cl. Prereq: 808.

810 Electromagnetic Field Theory II G 3

Solution of Maxwell's equations in time and frequency domains; field theorems; integral representations; eigenfunction solutions; fields of moving charges. Kouyoumjian.

Wi Qtr. 3 cl. Prereq: 719.

811* Waveguides and Resonators G 3

General theory of waveguides, modes, discontinuities, losses, cavities, and power considerations. Peake.

Wi Qtr. 3 cl. Prereq: 810, and 610 or 710.

814 Advanced Antenna Theory I G 3

Field theorems; boundary-value problems; solution of the integral equations for scattering problems; radiation integrals; far-field criteria; antenna theorems; mathematical and numerical techniques. Richmond.

Su Qtr. 3 cl. Prereq: 810 or 711.

815 Advanced Antenna Theory II G 3

Analysis and synthesis of linear and planar radiation systems; excitation and propagation of surface and leaky waves; modulated traveling-wave structures; backward-wave antennas. Walter.

Sp Qtr. 3 cl. Prereq: 810, and 611 or 711.

816* Propagation of Electromagnetic Waves G 3

Advanced study of transmission and reception of radio waves in the presence of the earth and its atmosphere; tropospheric, ionospheric, and scatter propagation. Levis.

Au Qtr. 3 cl. Prereq: 810 and 612 or 713.

817 Advanced Electromagnetic Theory I G 3

Representation of fields by vector wave functions and dyadic Green's functions; Huygen's principle for electromagnetic waves; application to antenna and scattering problems. Kouyoumjian.

Au Qtr. 3 cl. Prereq: 810 or equiv.

818 Advanced Electromagnetic Theory II G 3

Asymptotic methods and the geometrical theory of diffraction; integral equations and variational methods; propagation through inhomogeneous media and anisotropic media; surface waves. Kouyoumjian.

Wi Qtr. 3 cl. Prereq: 817, or 712 and 810.

819 Advanced Electromagnetic Theory III G 3

Application of saddle-point methods to electromagnetic problems; Fock theory for currents on curved surfaces; application of variational and perturbation techniques to electromagnetic problems. Kouyoumjian.

Sp Qtr. 3 cl. Prereq: 818, or 712 and 810.

829* Plasma Dynamics G 3

Motion of ions and electrons, ionization processes, electromagnetic phenomena in plasma, electron beams in plasma. Ko and Peters.

Sp Qtr. 3 cl. Prereq: 810.

830 Solid State Electron Devices I G 3

Physical properties of solids, crystal symmetry, lattice vibrations, electrons in a periodic lattice; the effective mass theorem. Swartz.

Au Qtr. 3 cl. Prereq: 631, 732, or equiv.

831†* Solid State Electron Devices II G 3

Irreversible thermodynamics and the Onsager relation; the Boltzman transport equation, lattice and impurity scattering, conductivity and related phenomena; optical properties of semiconductors. Swartz.

Wi Qtr. 3 cl. Prereq: 830.

832†* Solid State Electron Devices III G 3

Semiconductors and metals in strong electric and magnetic fields; theory of negative resistance devices, microwave devices, and related topics. Swartz.

Sp Qtr. 3 cl. Prereq: 831.

833†* Theory of Semiconductor Junction Devices I G 3

Low and high level injection in p-n junctions; recombination statistics; the bipolar transistor, static and switching characteristics, low and high frequency equivalent circuits, and thermal effects. Swartz.

Au Qtr. 3 cl. Prereq: 522.

834† Quantum Electron Devices G 3

Analysis of energy of atomic gases as applied to gas lasers; crystal structure of solid-state maser and laser materials.

Au Qtr. 3 cl. Prereq: 732 and 810.

839* Theory of Semiconductor Junction Devices II G 3

Continuation of 833; theory of the unipolar transistor, the MOS capacitor and transistor. Swartz.

Wi Qtr. 3 cl. Prereq: 833.

840* Electromechanical Systems G 3

Application of the methods of electric circuit analysis to mechanical, acoustical, electromechanical, and electroacoustical systems. Cowan.

Au Qtr. 3 cl. Prereq or concur: 750.

841 Computer Methods in Power System Analysis G 3

Network matrices, algorithms for formation of network matrices, three-phase network matrices; short circuit studies; iterative solutions of algebraic and differential equations; load flow and transient stability studies of large systems. Sebo and Smith.

Wi Qtr. 3 cl. Prereq: 740; prereq or concur CIS 541.

842 Economic Operation and Control of Electric Power Systems G 3

Principles of economic operation and control of isolated or interconnected electric power systems, including effects of power losses in transmission lines. Smith.

Au Qtr. 3 cl. Concur: 740.

843 Advanced Power System Analysis G 3

High voltage direct current systems; converter operation, control; harmonics, filters, reactive power requirements; reliability applications in power systems; Markov processes, combinatorial reliability; power system reliability evaluation. Sebo.

Sp Qtr. 3 cl. Prereq: 841 or 842.

850 Theory and Design of Feedback Control Systems G 3

Linear feedback theory, signal-flow graphs, time-domain methods, numerical integration applied to linear and nonlinear systems, multi-variable systems, controllability and observability, pole assignment. McGhee.

Wi Qtr. 3 cl. Prereq: 750.

851 Synthesis of Linear Feedback Control Systems G 3

Sampled-data systems, the Z-transform, digital compensation; synthesis of systems with statistical inputs and constraints; advanced topics. Weimer.

Sp Qtr. 3 cl. Prereq: 755 and 850.

853* Analysis of Non-Linear Systems G 3

An advanced study of non-linear systems and methods of analysis; stability studies with Liapunov functions and functional analysis; applications from electric circuits and control systems. Fenton.

Au Qtr. 3 cl. Prereq: 754, and 702 or 851 or Stat 520 or permission of instructor.

854* Optimal Control Theory I G 3

Optimal control by dynamic programming, Pontryagin's maximum principle, and variational methods; minimum time, energy, and fuel problems for linear continuous and discrete systems. Hemami. Wi Qtr. 3 cl. Prereq: 752, and 750 or 801.

855* Optimal Control Theory II G 3

Computational methods in optimal control, quasi-linearization, and invariant imbedding; estimation and filtering for continuous and discrete linear systems; introduction to stochastic system optimization. Hemami.

Sp Qtr. 3 cl. Prereq: 854.

863 Coding Theory G 3

The coding problem; linear codes and their implementation; cyclic codes. Lackey.

Wi Qtr. 3 cl. Prereq: 760 or equiv with written permission of instructor.

864 Digital Systems G 3

Digital system hardware and software design alternatives; simulation and emulation of computers; control structure and microprogramming; advanced topics. Breeding.

Wi Qtr. Sp Qtr. 3 cl. Prereq: 760.

865 Sequential Switching Circuits G 3

State identification and fault detection; finite automata, memory definiteness, and information losslessness; linear sequential machines; finite state recognizers. McGhee.

Au, Sp Qtrs. 3 cl. Prereq: 761 or permission of instructor.

Radio Astronomy Theory I

See Astron 862.

Radio Astronomy Theory II

See Astron 863.

870 Biological Systems Modeling I G 3

Consideration of current literature in the area of biological system modeling; cardio-vascular, and pulmonary systems; computer implementation of models. Weed.

Au Qtr. 2 cl, 1 3-hr lab. Prereq: 550, or concur Physiol 600 or 601.

871 Biological System Modeling II G 3

Modeling of such biological systems as renal or thermoregulatory for parameter identification; digital and analog computer laboratory implementation. Weed.

Wi Qtr. 2 cl 1 3-hr lab. Prereq: 550, Physiol 600 or 601.

872 Bio-Medical Systems Modeling of Man-Machines G 3

Systems theory applied to the engineering aspects of the human eye-hand tracking interface comparing hybrid computer simulation with experimental data. Weed.

Sp Qtr. 3 cl. Prereq: 870 or 871.

873 Clinical Instrumentation and Signal Processing G 3

Basic principles of information transfer and signal processing as applied to clinical health care delivery, such as remote diagnosis, ECG analysis, and telemetry. Campbell.

Sp Qtr. 3 cl. Prereq: 601, 771, and Physiol 600 or 601.

880 Advanced Studies in Electrical Engineering G 1-18

Su, Au, Wi, Sp Qtrs. 1-3 cl. Repeatable to a maximum of 18 cr hrs.

881 Seminar in Electrical Engineering G 1-3

Su, Au, Wi, Sp Qtrs. 1-3 cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

894 Group Studies in Electrical Engineering G 1-18

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 18 cr hrs.

899 Interdepartmental Seminar G 1-5

See Interdepartmental Seminars.

910 Advanced Antenna Theory III G 3

Timemodulated antennas, synthetic aperture antennas, logical switching antennas, nonlinear processing antennas, and correlation arrays; the effects of signal-processing on beamwidth, gain, and multiple-target response. Compton, Ksienski, and Walter.

Wi Qtr. 3 cl. Prereq: 810, 804, and 611 or 711.

993 Individual Studies in Electrical Engineering G 1-18

Su, Au, Wi, Sp Qtrs. Individual conf. Repeatable to a maximum of 18 cr hrs.

999 Research in Electrical Engineering G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Engineering

Office: 122 Hitchcock Hall, 2070 Neil Avenue, 422-8143

134† Environmental Science and Technology U 5

Principles and application of science and technology in the abatement of pollution of soil, air, water, and biomass from agricultural, municipal, industrial, and nuclear wastes. Glower, Sweeney, and Taignaides.

Wi Qtr. 5 cl. Prereq: Chem 101 or equiv.

210† Technology and Society I U 5

Basic concepts and modes of thinking of our technological age; emphasis on the decision process and modeling.

Au, Sp Qtrs. 5 cl. Prereq: One year of high school algebra. Not open to students in the College of Engineering.

211† Technology and Society II U 5

Continuation of 210 with emphasis on dynamic systems including the concepts of feedback and stability.

Wi Qtr. 5 cl. Prereq: 210 Not open to students in the College of Engineering.

220†* Understanding Systems U 3

Discussions of historical, philosophic, and sociologic antecedents to the development of a science of systems; students draw upon their individual experiences with real systems to formulate a science or systems. Smith.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

H298 Engineering Honors Seminar U 1

Undergraduate Research Scholars will present oral reports and lead discussion on their specific research projects. Verner.

Sp Qtr. 1 cl. Prereq: participation in Engineering Honors Program. Repeatable to a maximum of 2 cr hrs.

Engineering Graphics

Office: 240 Hitchcock Hall, 2070 Neil Avenue, 422-7923

110 General Engineering Graphics U 5

Graphic language of engineering and its application to the analysis, development, representation, and communication of engineering concepts.

Su, Wi, Sp Qtrs.. 5 2-hr cl and lab. Prereq or concur: Math 149 or 150. H190 (honors) may be available to students enrolled in an honors program.

121 Graphic Presentation I U3

Representation of three-dimensional subjects by precise graphics; orthographic and pictorial. Parkinson.

Au, Wi, Sp Qtrs. 3 2-hr cl and lab.

122 Graphic Presentation II U 3

Continuation of 121; elements of descriptive geometry, intersections and development of surfaces, shade and shadow, size description; selected design problems. Reed.

Au, Wi, Sp Qtrs. 3 2-hr cl and lab. Prereq: 121

H190 General Engineering Graphics U 5

Graphic language of engineering and its application to the analysis, development, representation and communication of engineering concepts; introduction to design. LaRue.

Wi Qtr. 5 2-hr cl and lab. Prereq: Honors admission to College of Engineering.

200 Computer Utilization with Introduction to Engineering Analysis U 3

Application of the digital computer to engineering analysis. Use of algebraic programming languages; Computer Center facilities and procedures.

Su, Au, Wi, Sp Qtrs. 3 cl and lab hr. H200 (honors) may be available to students enrolled in an honors program. 200A, a self-paced version, may also be available. Prereq or concur: Math 151.

204 Technical Drawing U 3

Various systems of size description, including precision dimensioning; fastening systems; organization and preparation of engineering drawings.

Au, Wi, Sp Qtrs. 2 2-hr cl and lab. Prereq: 122 or written permission of instructor.

206 Graphical Representation of Sheltering Structures U 4

Preparation of drawings of wood-framed and steel-framed residential and light commercial buildings; terminology; permit and code requirements. Reed.

Au Qtr. 4 2-hr cl and lab. Prereq: 122, 237, or equiv with written permission of instructor.

237 Engineering Graphics for Interior Designers U 5

Representation of three-dimensional subjects by precise graphics; orthographic and pictorial; shade and shadows; applications to interior design. Parkinson.

Sp Qtr. 5 2-hr cl and lab.

294 Special Problems in Engineering Graphics U 1-5

Group studies of specially selected topics.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

400 Advanced Engineering Computation U 3

An advanced course in numerical and computational methods with emphasis on the application of the digital computer to the solution of engineering problems. Kearns.

Su Qtr. 3 1-hr cl. Prereq: 200 or equiv with written permission of instructor.

410 Computer Graphics U 3

An advanced course in graphics with emphasis on the application of computer-generated graphics to the solution of engineering problems. LaRue.

Sp Qtr. 3 1-hr cl. Prereq: 200 or equiv with written permission of instructor.

593 Individual Studies U G 1-5

Opportunity to pursue special-interest topics not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

Engineering Mechanics

Office: 209 Boyd Laboratory, 155 West Woodruff Avenue, 422-2731

204 Applied Mechanics U 3

Statics of force systems by analytical and graphical means; introduction to response of deformable bodies to axial, bending, and torsional loads; area-moment methods.

Au, Wi Qtrs. 3 cl. Prereq: Math 152.

205 Applied Mechanics U 3

Continuation of 204.

Wi, Sp Qtrs. 3 cl. Prereq: 204.

206 Applied Mechanics U 3

Continuation of 205.

Su, Sp Qtrs. 3 cl. Prereq: 205.

210 Statics U 4

Resultant and equilibrium of coplanar and non-coplanar force systems; trusses, frames and connected bodies; friction; centroids and moment of inertia of masses and areas.

Au, Wi, Sp Qtrs. 4 cl. Prereq: Physics 131; prereq or concur Math 254.

215 Statics and Strength of Materials U 5

Resultant and equilibrium of isolated and connected body force systems; introduction to response of deformable bodies to action of axial, bending and torsional loads.

Au, Wi, Sp Qtrs. 5 cl. Prereq: Physics 131; prereq or concur Math 254.

410 Dynamics U 4

Linear and angular motion from constant and variable forces; connected bodies; impulses; momentum; energy.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 210 or 215. Not open to students with credit for 415.

415 Dynamics U 4

Dynamics of particles and rigid bodies; impulses, momentum, work and energy; three dimensional vector acceleration; conservative systems; single degree of freedom vibration analysis.

Au, Sp Qtrs. 4 cl. Prereq: 210 or 215; Math 255 or 415.

420 Strength of Materials U 4

Normal and shearing stress and strain; energy; torsion; flexural stress; beam deflections; combined stress, theories of failure; columns.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 210.

427 Strength of Materials Laboratory U 1

Experimental study of response of deformable bodies to loads using mechanical and electrical gages and methods of photoelasticity.

Sp Qtr. 1 2-hr lab. Prereq or concur: 420.

622 Advanced Strength of Materials U G 4

Mohr's Circle for strain; failure theories; curved beams; bending of non-symmetrical sections; non-circular torsion; beams on elastic foundations; load-deflection relations by energy methods.

Au Qtr. 4 cl. Prereq: 215 or 420; Math 255 or equiv.

627 Experimental Methods in Mechanics U G 3

Static and dynamic strain analysis by electrical gages; grid techniques; brittle coatings; analogies; reflective photoelasticity in normal and oblique incidence; motion measurements.

Wi, Sp Qtrs. 2 cl, 2 lab hrs. Prereq: 215 or 420.

633 Vibrations Laboratory U G 3

Experiments in vibrations of discrete systems, beams, plates, and shells; stress wave propagation.

Sp Qtr. 2 2-hr lab. Prereq: 410 or 415; Math 255 or equiv.

644 Engineering Fracture Mechanics U G 3

Fracture and fatigue; stress intensity factors; the stability of cracks; compliance and energy rate analysis; plane stress, plane strain; crack propagation and arrest.

Wi Qtr. 3 cl. Prereq: 420, and Math 512 or equiv with written permission of instructor.

648* Optical Measurements in Mechanics U G 3

Optical methods to measure deformations in two and three dimensional static and dynamic problems; photoelasticity, holography, Moire fringes, diffraction techniques.

Wi Qtr. 2 cl, 2 lab hrs. Prereq: 215 or 420.

694 Group Studies in Engineering Mechanics U G 2-5

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. The student must register for a specific study area indicated below, and may register for more than one at a time.

- a—Experimental Stress Analysis
- b—Dynamics
- c—Fluid Mechanics
- d—Elasticity
- e—Strength of Materials
- f—Vibrations
- g—Plasticity
- h—Plates and Shells
- i—Continuous Media
- j—Fracture Mechanics
- k—Biomechanics
- l—Ultrasonics

711 Advanced Engineering Dynamics U G 4

Three dimensional kinematics and kinetics of particles and rigid bodies; Lagrangian mechanics; Hamiltonian methods; engineering applications.

Sp Qtr. 4 cl. Prereq: 410 or 415; Math 255 or equiv.

712†* Energy Principles in Mechanics U G 3

Theoretical development of energy principles in mechanics; strain energy and complementary energy with related minimal principles; applications to problems in elasticity, dynamics, and vibrations.

Au Qtr. 3 cl. Prereq: 420 and Math 255 or equiv.

731 Vibrations of Discrete Systems U G 4

Free and forced vibrations of mechanical systems having lumped mass and elasticity; multiple degrees of freedom; dissipative systems; random vibrations; engineering applications.

Au Qtr. 4 cl. Prereq: 410 or 415; Math 255 or equiv.

732* Non-Linear Vibrations U G 3

Vibrations of damped and undamped systems with non-linear restoring forces; self-sustained oscillations; application of Hill's equation of stability of non-linear oscillations.

Sp Qtr. 3 cl. Prereq: 731 and Math 255 or equiv.

734 Vibrations of Continuous Systems U G 3

Equations of motion for strings, membranes, prismatical bars, and plates for various boundary conditions; approximate methods for complicated shapes; wave propagation in elastic media.

Wi Qtr. 3 cl. Prereq: 410 or 415; Math 255.

740 Elasticity U G 4

Classical problems in elasticity: St-Venant torsion and bending theory; plane problems in rectangular and polar coordinates; axisymmetric problems.

Au Qtr. 4 cl. Prereq: 215 or 420; prereq or concur Math. 512.

743 Introduction to Continuum Mechanics U G 4

Continuum mechanics in Cartesian coordinates, analysis of deformation and stress, balance principles, constitutive equations; introductory concepts in viscoelasticity and plasticity.

Sp Qtr. 4 cl. Prereq: 420 and Math 255.

751* Elastic Stability U G 3

Buckling of struts, rings, arches, and plates; torsional instability; stability criteria, exact and approximate methods.

Au Qtr. 3 cl. Prereq: 420, and Math 255 or equiv.

752†* Theory of Dynamic Stability U G 3

Study of the criteria for dynamic stability; methods of stabilizing critical mechanical systems; applications to space mechanics, structures, and vehicles.

Sp Qtr. 3 cl. Prereq: 731.

754 Plates and Shells U G 4

Basic equations; classical solutions and approximate methods in the theory of thin plates. Membrane theory of shells of revolution.

Wi Qtr. 4 cl. Prereq: 215 or 420; prereq or concur Math 512.

761 Application of Engineering Analysis U G 3

Solution of boundary values and eigenvalue problems in mechanics by approximate methods; finite difference and finite element methods.

Au Qtr. 3 cl. Prereq: Engr Gr 200 and Math 512. Not open to students with credit for Civil En 761. Cross-listed in Civil En.

770†* Biomechanics U G 3

Discrete mass and continuum mechanics; description of biological materials; biodynamics of limb and gross body motions; various models for injury to head, neck and torso.

Wi Qtr. 3 cl. Prereq: 420; Math 415 or 512; or permission of instructor.

793 Individual Studies in Engineering Mechanics U G 2-5

See 694 for topics.

Su, Au, Wi, Sp Qtrs. Prereq: 711, 731, 740, and permission of instructor. Repeatable to a maximum of 15 cr hrs.

800* Methods of Engineering Analysis G 3

Solution of boundary value, eigenvalue, and initial value problems arising in mechanics by approximate methods; weighted residual and stationary functional methods.

Au Qtr. 3 cl. Prereq: 10 cr hrs of 700-level courses in eng mech; Math 512 or equiv.

833* Elastic Wave Propagation G 3

Dispersion and group velocity; waves in extended media; propagation and reflection in half space; Lamb problem; waves in plates and rods by exact theory; scattering of waves.

Au Qtr. 3 cl. Prereq: 731 or 734.

835†* Random Vibrations G 3

Description of random processes; statistical properties of the response of mechanical systems; optimization of systems subjected to random inputs; instrumentation.

Au Qtr. 3 cl. Prereq: 731.

840†* Theory of Continuous Media G 3

Equilibrium, compatibility, and strain displacement relationships for a general continuum; constitutive equations for problems of elasticity, fluid dynamics, and inelasticity.

Au Qtr. 3 cl. Prereq: 740.

843* Advanced Elasticity G 3

Complex variable methods; anisotropic elasticity; three-dimensional elasticity; mixed boundary value problems; variational methods.

Wi Qtr. 3 cl. Prereq: 740.

847†* Theory of Plasticity G 3

Plastic range stress-strain relations; elasto-plastic behavior of beams, and trusses; torsion of prismatic bars; plane strain; shear lines; limit analysis.

Wi Qtr. 3 cl. Prereq: 740 and Math 512.

855* Advanced Shells G 3

Differential geometry of surface; general equations for arbitrary shell; solutions to membrane and bending equations.

Sp Qtr. 3 cl. Prereq: 754.

864†* Theory of Viscoelasticity G 3

Basic concepts of time dependent inelastic behavior; viscoelastic constitutive laws; correspondence principles; quasi-static and dynamic problems.

Sp Qtr. 3 cl. Prereq: 740.

889 Seminar in Engineering Mechanics G 1

Lectures and discussions covering a wide range of topics, presented by staff, graduate students, and guest speakers.

Wi, Sp Qtrs. 1 cl. Repeatable to a maximum of 6 cr hrs.

894 Group Studies in Engineering Mechanics G 2-5

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. The student must register for a specific study area indicated below, and may register for more than one at a time.

- a—Experimental Stress Analysis
- b—Dynamics
- c—Fluid Mechanics
- d—Elasticity
- e—Strength of Materials
- f—Vibrations
- g—Plasticity
- h—Plates and Shells
- i—Continuous Media
- j—Fracture Mechanics
- k—Biomechanics
- l—Ultrasonics

993 Individual Studies in Engineering Mechanics G 2-5

See 894 for topics.

Su, Au, Wi, Sp Qtrs. Prereq: Evidence of sufficient background in area of study chosen, and permission of instructor. Repeatable to a maximum of 15 cr hrs.

999 Research in Engineering Mechanics G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

HEATH EDUCATION

633 Historical Perspectives on
Health Education U G 03

Traces the evolution of health education as a discipline by emphasizing the individuals and events that contributed to its development.

Wi Qtr. 2 1 1/2-hr cl. Prereq: 4th yr standing or above.

Effective Wi 78.

COURSE WITHDRAWALS Series No. 77-31
December 7, 1977

SPANISH

105 Elementary Spanish Conversation &
& Composition U 05

105.02 For Native or Near-Native Speakers

Intensive practice in oral and written Spanish
with focus on specific problems in communica-
tion encountered by native speakers of Spanish.

Au Qtr. 5 cl. Prereg: Placement exam in
Spanish above 102 and an oral exam. Open only
to native and/or near-native speakers of Spanish.

640 Spanish American Culture U G 05

Major elements in the culture of the people of
Spanish America. Iglesias.

Wi Qtr. 5 cl. Prereg: 105, 401, and either
402 or 403. Taught entirely in Spanish.
Effective Wi 78.

641 Spanish Peninsular Culture U G 03

Major developments in the culture of Spain. Iglesias.

Sp Qtr. 3 cl. Prereg: 105, 401, and either 402 or
403. Taught entirely in Spanish.

220 Introduction to Social Welfare U 3

Exploration of the universality of human needs and the American experience in meeting those needs through the institutional arrangements of church, family, government, and market place.

Au, Wi, Sp Qtrs. 3 cl. Designed primarily for freshmen and sophomores.

240 Introduction to Social Work Profession and Practice U 3

Social work within society and the community of professions; exploration of purposes, problems and opportunities of practice; observation of and exposure to practice in the field.

Au, Wi, Sp Qtrs. 3 cl. Designed primarily for freshmen and sophomores.

503 Juvenile Delinquency: Its Treatment and Prevention U G 5

Juvenile delinquency as a social problem; methods of treatment and prevention, including juvenile courts, clinics, probation, parole, correctional institutions, child placement, and recreational programs.

Au, Wi, Sp Qtrs. 2 2½-hr cl. Prereq: 3rd or 4th year standing.

505 Social Implications in Rehabilitation U G 3

The significance of disability and employment in their social, medical, and industrial application; rehabilitation as a process; current concepts.

Au, Sp Qtrs. 3 cl. Prereq: 3rd or 4th yr standing. Not for grad credit to students in soc work.

507 Social Work and Health Services U G 3

The nature, organization, and function of programs, facilities in the health practice field; the social and economic implication of chronic disease.

Wi Qtr. 3 cl. Prereq: 4th yr standing or permission of instructor.

509 Legal Aspects of Social Work U G 3

Law as a means of social control; study of case, statute, and constitutional law most frequently involved in social work practice; legal aid.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 3rd or 4th yr. standing or permission of instructor. Not for grad credit to students in soc work.

English

Office: 421 Denney Hall, 164 West 17th Avenue,
422-6065

071 General English for Foreign Students U 5

Review of English structure for foreign students; proceeds from basic oral-aural patterns to their application in writing. Sutton, Director.

Au, Wi, Sp Qtrs. Course credit will not be counted toward graduation.

072 Advanced English for Foreign Students U 5

Develops academic and social effectiveness in the use of advanced patterns in written and spoken English. Sutton, Director.

Su, Au, Wi, Sp Qtrs. Course credit will not be counted toward graduation.

073 Special Problems in English for Foreign Students U 3

Attention given to special academic problems of foreign students; concentrated work on idiomatic structure and diction in writing reports, themes, examinations, and theses. Sutton, Director.

Su, Au, Wi, Sp Qtrs. Course credit will not be counted toward graduation.

100 Basic Writing U 3

An introduction to writing and reading skills in preparation for 110.

Su, Au, Wi, Sp Qtrs. Students are placed in 100.01 or 100.02 on the basis of testing. Credit for 100.01 and 100.02 will not count toward graduation in some degree programs.

100.01 Writing Workshop I

Prereq: Determined by testing. Not open to students with credit for 100, 100.02, or 110.

100.02 Writing Workshop II

Prereq: Determined by testing or completion of 100.01. Not open to students with credit for 100 or 110.

110 Freshman English Composition U 5

Training in the fundamentals of expository writing, as illustrated in the student's own writing and in the essays of professional writers. Miller, Director.

Su, Au, Wi, Sp Qtrs. No prereq except when testing determines 071, 072, 073, 100.01, or 100.02 to be required. Not open to students with credit for 100, 102, 103, 104, 105, H195, or 301.

160 Introduction to Literature U 3

An introduction to selected works of major British and American writers, designed to stimulate and train the reader's application of literature.

Au, Wi, Sp Qtrs. H160 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: Freshman standing only.

193 Individual Studies U 3-5

Su, Au, Wi, Sp Qtrs. Prereq: Freshman standing and permission of Director of Freshman English. Repeatable to a maximum of 10 cr hrs.

General Prerequisites for Courses Numbered 200

Unless otherwise indicated, the prerequisites for 200-level courses are English 100, 103, 105, 110 or H195.

220 Introduction to Shakespeare U 5

Study of selected plays designed to give an understanding of drama as theatrical art and as an interpretation of fundamental human experience. Su, Au, Wi, Sp Qtrs. Students working toward the BA in English should elect 520 instead of 220.

260 Introduction to Poetry U 5

Designed to help students understand and appreciate poetry through intensive study of a representative group of poems.

Su, Au, Wi, Sp Qtrs.

261 Introduction to Fiction U 5

Intensive study of a number of short stories and novels to acquaint the general student with some of the important themes and techniques of fiction.

Su, Au, Wi, Sp Qtrs.

262 Introduction to Drama U 5

A critical analysis of selected dramatic masterpieces from Greek antiquity to the present, designed to clarify the nature and major achievements of western dramatic art.

Au, Wi, Sp Qtrs.

265 Writing of Fiction I U 5

Practice in the writing of fiction; analysis and discussion of student work, with some attention to general methods of fiction and the publishing situation. Canzoneri, Director.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of director. Repeatable to a maximum of 10 cr hrs.

266 Writing of Poetry I U 5

Practice in the writing of poetry; emphasis on the students' own work, with reference to established poetic patterns and established poetry. Canzoneri, Director.

Au, Sp Qtrs. Prereq: Permission of director. Repeatable to a maximum of 10 cr hrs.

270 Introduction to Folklore U 5

A general study of the field of folklore including basic approaches and a survey of primary folk materials; folktales, legends, folksongs, ballads, and folk beliefs.

Au, Wi, Sp Qtrs.

271 Introduction to English Language Study U 5

An introduction to the grammar, history, and social and regional dialects of the English language.

Su, Au, Wi Qtrs. Not open to students with credit for 570, 669, 671, 672, Ling 201 or 601.

272 Introduction to Science Fiction U 5

An introduction to science fiction, especially of the 20th century varieties, with equal emphasis on the literature, its origins, and its social ramifications.

Au, Wi, Sp Qtrs. 4 or 5 cl.

273 American and English Literature and Film U 5

The interrelationship between literary and cinematic art.

Au Qtr. 2 2¼-hr cl.

275 Thematic Approaches to Literature U 5

An introduction to literature through the examination of a major theme as treated in different genres and periods; topic varies quarterly.

Sp Qtr.

280 The English Bible U 5

A study of the Bible, in English translation, with respect to literary questions, historical development, and religious concepts.

Su, Au, Wi, Sp Qtrs.

281 Introduction to Afro-American Literature U 5

A study of representative literary works by Black American writers from 1760 to the present.

Au, Wi, Sp Qtrs. Offered in cooperation with Black Studies.

283 Masterpieces of English Literature U 5

Introduction to medieval and renaissance narrative poetry, beginning with Beowulf and including major works of Chaucer, Spenser, and Milton.

Au Qtr. Not open to students with credit for 293.

284 Masterpieces of English Literature U 5

The neo-classical and romantic periods; major works by such authors as Pope, Swift, Dryden, Johnson, Wordsworth, Coleridge, and Keats.

Wi Qtr.

285 Masterpieces of English Literature U 5

The Victorian and early modern periods with major works by such authors as Tennyson, Browning, Arnold, Shaw, Conrad, Lawrence, Joyce, and Yeats. Au, Sp Qtrs. Not open to students with credit for 240 or 295.

290 Masterpieces of American Literature U 5

A critical study of some major American writers chosen from among the following: Poe, Hawthorne, Emerson, Thoreau, Melville, Whitman, Dickinson, Twain, James, Frost, Eliot, Faulkner, and Hemingway. Su, Au, Wi, Sp Qtrs. Not open to students with credit for 551, 552, 553.

294 Group Studies U 3-5

Topic varies from quarter to quarter on subjects not otherwise covered by English courses.

Wi, Sp Qtrs. Repeatable to a maximum of 30 cr hrs.

H296 Sophomore Honors Seminar U 5

Studies in the relationship of works of literature to their general intellectual contexts, involving such topics as Deism, Marxism, Primitivism, Freudian psychology; topic varies quarterly.

Au, Qtr. Prereq: Cumulative point-hour ratio of 3.0 or better, with 3.5 or better in English, and permission of dept.

H299 English Honors Proseminar U 5

An introduction to the materials and methods of literary study through intensive reading in one major English or American author; topic varies quarterly.

Sp Qtr. Prereq: Cumulative point-hour ratio of 3.0 or better, with 3.5 or better in English, and permission of dept.

301 Informative Writing U 5

Intensive advanced training in the art of informative writing.

Su, Au, Wi, Sp Qtrs. Prereq: 3rd yr standing and 100 or equiv with written permission of instructor.

302 Critical Writing U 5

Intensive practice in writing various kinds of analyses of literary texts.

Au, Wi, Sp Qtrs. Prereq: 110 or equiv with written permission of instructor. Required of English majors.

305 Technical Writing U 3

Training in practical writing for industry, business, and research, with emphasis on the special requirements and techniques for the professional report. Passe, Director.

Su, Au, Wi, Sp Qtrs. 2 cl, 1 hr conf. Prereq: 3rd yr standing in the BS curricula.

General Prerequisites for Courses Numbered 500

These courses may provide graduate credit only in depts other than English. Prerequisites: 15 hrs of courses in English on the 200 level, or 10 hrs in English and 10 in specific allied departments.

513† Introduction to Medieval Literature U G 5

The study of masterpieces from the Middle Ages, chosen for their values in interpreting medieval culture as well as for their independent literary worth.

520 Shakespeare U G 5

A critical consideration of the art, personality, and achievement of Shakespeare in the light of Renaissance and modern significance.

Su, Au, Sp Qtrs.

521 The English Renaissance U G 5

A study of Tudor prose and poetry as they exemplify literary art and as they reflect the creative and inquiring temper of the age.

Sp Qtr. Not open to students with credit for 621.

522† Early 17th Century Literature U G 5

A study of the poetry and prose of 1600-1660, excluding the major works of Milton.

530 Milton U G 5

A study of the major poetry and prose, with emphasis on Paradise Lost, Paradise Regained, and Samson Agonistes.

Wi Qtr.

531 Age of Wit and Satire U G 5

The skeptical mind of the Early Enlightenment as shown in lyric and satiric verse, essays, and drama, from Dryden to Pope.

Au Qtr.

535 Literature of the 18th Century U G 5

The ideas and artistry of the Age of Reason as reflected in the work of major figures: Swift, Pope, Fielding, Sterne, Boswell, Johnson, and Blake.

Sp Qtr.

540 Romantic Poetry U G 5

English literary and intellectual romanticism as seen in the poetry of Wordsworth, Coleridge, Byron, Shelley, and Keats, and selected critical documents of the period.

Wi Qtr.

541 Victorian Poetry U G 5

Readings in the poetry of Tennyson, Browning, Arnold, Swinburne, Rossetti, Meredith, Hopkins, and Hardy, as seen against the background of Victorian ideas and literary taste.

Sp Qtr.

542 19th Century English Novel U G 5

Readings in a group of major novelists, such as Austen, Dickens, and Thackeray, with special emphasis upon social and humanistic values.
Au, Sp Qtrs. Not open to students with credit for 641.

543 20th Century British Fiction U G 5

A study of the development of British fiction after 1900, with emphasis on such major novelists as Conrad, Joyce, Lawrence, and Woolf.
Au Qtr. Not open to students with credit for 643.

547 20th Century Poetry U G 5

A study of 20th century American and British poetry, with emphasis on such major figures as Frost, Yeats, Stevens, Eliot, Williams, and Auden.
Wi Qtr.

551 American Renaissance in Literature U G 5

An introduction to the major American writers of the mid-19th century: Poe, Hawthorne, Melville, Emerson, Thoreau, and Whitman.
Au, Sp Qtrs.

552 American Literature, 1865-1914 U G 5

Studies in fiction and poetry emphasizing such major figures as Twain, Howells, James, Dickinson, Robinson, Crane, Dreiser, and Willa Cather.
Su, Wi Qtrs.

553 20th Century American Fiction U G 5

A study of American fiction after 1914, with emphasis on the work of such major figures as Anderson, Fitzgerald, Hemingway, and Faulkner.
Au, Wi, Sp Qtrs.

580† Afro-American Language U G 5

A lexical, phonological, and grammatical examination of Afro-American language as used in black literature, the blues, street-corner dialogues, and other social and cultural situations.

581 Afro-American Folklore U G 5

A study of the oral traditions of black American culture including folktales and other narrative lore, folksongs, blues, spirituals, and work songs.
Au Qtr.

H590 Junior Honors Seminar U 5

Intensive study of one of the major periods of English and American literature; periods vary quarterly.
Au, Wi Qtrs. Prereq: Cumulative point-hour ratio of 3.0 or better, with a 3.5 or better in English, and permission of dept.

H590.01 The Middle Ages**H590.02 The Renaissance****H590.03 Neo-Classicism****H590.04 Romanticism****H590.05 The Later 19th Century****H590.06 The Modern Period****592 Women in Literature U G 5**

Evaluations of assumptions about the nature and role of women as reflected in literature.
Sp Qtr.

599 Senior Seminar and Tutorial U 5

A reading course designed to unify students' knowledge of English and American literature and to clarify their understanding of problems of interpretation and criticism.
Sp Qtr. Prereq: English majors in their senior year.

General Prerequisites for Courses Numbered 600 and 700

These courses may provide graduate credit in all depts. Prerequisites: 15 hrs of courses in English at the 500 level, or 10 hrs in English and 10 hrs on the 300-500 level in specified allied departments.

645† Introduction to Chaucer U G 5

A close study of Troilus and Criseyde and The Canterbury Tales as introduction to the artist and his period.

624 English Drama: Medieval and Renaissance U G 5

A study of English popular drama from its origin to 1642, with special emphasis upon the evolution of dramatic concepts and theatrical art.

Sp Qtr. Prereq: 220, 262, or equiv.

634† English Drama: Restoration and 18th Century U G 5

A study of English drama from 1660 to 1800: Restoration heroic drama and wit comedy, 18th century sentimental drama, the comedy of Goldsmith and Sheridan.

Prereq: 220, 262, or equiv.

642† 19th Century Prose U G 5

Selections from the principal romantic and Victorian non-fictional prose writers, read both as literary art and as documents of contemporary thought.

648 Contemporary Literature U G 5

A study of the development of contemporary American and British fiction and poetry, concentrating upon representative works of major authors from 1945 to the present.

Au Qtr.

649† Modern Drama U G 5

An historical and critical examination of the major developments, personalities, and achievements in the drama of Europe and America since the advent of Ibsen.

665 Writing of Fiction II U G 5

Practice in the writing of fiction; continuation of 265 at an advanced level.

Au, Wi, Sp Qtrs. Prereq: 265 or equiv and permission of instructor. Repeatable to a maximum of 10 cr hrs.

666 Writing of Poetry II U G 5

Practice in the writing of poetry; continuation of 266 at an advanced level.

Sp Qtr. Prereq: 266 or equiv and permission of instructor. Repeatable to a maximum of 10 cr hrs.

667† Playwriting U G 5

Practice in the writing of plays; analysis and discussion of student work, with some attention to general dramatic methods.

Prereq: Permission of instructor.

669 Applied English Phonology U G 5

A study of English phonology and its application to a variety of literary and non-literary resources.

Wi Qtr. Prereq: 271 or Linguist 201 or 601.

670 Advanced Folklore U G 5

An advanced study of the major forms of folklore with emphasis on folktales, legends, folksongs, and ballads. Topic varies.

Wi Qtr. Prereq: 270 or equiv or grad standing.

671 Introduction to English Grammar U G 5

A study of various systems of English grammar, with emphasis on their application to writing and teaching. Su, Au Qtrs. Prereq: 271 or Linguist 201 or 601.

672 Introduction to the History of English U G 5

A study of the historical development of the English language, with emphasis on its outer history, and on the history of words and sentences.

Wi Qtr. Prereq: 271 or Linguist 201 or 601.

676 History of Literary Criticism U G 5

Intensive study of the basic texts in literary criticism from Plato to T. S. Eliot.

Au Qtr.

693 Individual Studies U G 1-5

Students may register for individual directed study under this number for work not normally offered in courses.

Su, Au, Wi, Sp Qtrs. Prereq: Sr standing and permission of instructor and of dept undergrad or grad committee. Repeatable to a maximum of 10 cr hrs.

694 Group Studies U G 2-5

Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

H695 Senior Honors Seminar U 5

Selected problems (themes, movements, genres, and styles) emphasizing continuity and development in English and American literary and linguistic history; topic varies quarterly.

Wi Qtr. Prereq: Cumulative point-hour ratio of 3.0 or better, with a 3.5 or better in English, and permission of dept.

710 Introduction to Old English Language and Literature U G 5

The reading of Old English prose with special attention to the language and to cultural background.

Au Qtr.

713 Introduction to Middle English Language U G 5

An intensive study of Middle English phonology, morphology, syntax, and dialectology from 1100-1500, with selected readings in the literature.

Sp Qtr.

716† The Middle Ages U G 5

A lecture-survey of Late Middle English literature concentrating on the period 1300-1500.

726 The Renaissance U G 5

A lecture-survey of literature of the English Renaissance, 1500-1660.

Wi Qtr.

736† The Restoration and 18th Century U G 5

A lecture-survey of English literature between 1660 and 1798.

746 The 19th Century U G 5

A lecture-survey of 19th century English literature, 1798-1900.

Au Qtr.

756† American Literature U G 5

A lecture-survey of American literature between 1820 and 1900.

766 20th Century English and American Literature U G 5

A lecture-survey of 20th century English and American literature.

Au Qtr. 2 2-hr cl.

H783 Honors Essay U 3-5

A program of reading arranged for each student, with individual conferences, reports, and honors thesis.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing; a grade of A in at least half of the English courses taken and an average of B in the remainder; permission of professor under whose supervision the work is to be completed. Open only to candidates for distinction in English who have in their junior year completed with high grades a program approved by the undergraduate committee. Repeatable to a maximum of 10 cr hrs.

General Prerequisites for Courses Numbered 800

Prerequisites: 30 hrs of courses in English or 20 hrs in English and 25 hrs in specified allied disciplines.

800 Introduction to Graduate Study G 2

An introduction to the methods and tools of graduate study in English and American literature.

Au Qtr. Open only to MA candidates. Required of all MA candidates.

812 Studies in Beowulf G 5

A close study of the text of Beowulf and its background.

Wi Qtr. Prereq: 710 or equiv with written permission of instructor.

814 Studies in Early English Literature G 5

Wi Qtr. 2 2-hr cl.

814.01 Old English Poetry, Exclusive of Beowulf

The critical reading of selections from the major types of Old English poetry.

Prereq: 710, 810 or equiv with written permission of instructor.

814.02 Poetry of the Alliterative Revival

An intensive study of English alliterative poetry of the 14th and 15th centuries.

Prereq: 713 or 813 or written permission of instructor.

814.03 Medieval English Drama

An intensive study of the major traditions of English drama in the 15th and 16th centuries.

814.04 Fifteenth-Century Non-Dramatic Literature

An intensive study of 15th century English poetry and/or prose.

815 Studies in Chaucer G 5

A critical study of some aspect of Chaucer's work in depth.

Sp Qtr.

820 Studies in Shakespeare G 5

An intensive consideration of selected problems in the scholarly study of Shakespeare.

Au Qtr.

821 Studies in Renaissance Prose G 5

The evolution of literary prose from More to Milton as seen in representative works which are related critically to rhetorical theory and significant cultural forces.

Su Qtr.

822† Studies in Renaissance and Early 17th Century Poetry G 5

A close study of significant verse of the late 16th and early 17th centuries.

823 Studies in Spenser G 5

A study of Spenser's poetry, its literary significance and its relation to foreign, classical, and native English poetic traditions.

Sp Qtr.

824† Studies in Renaissance Drama G 5

A critical study of significant trends in English drama between 1500 and 1642, excluding Shakespeare.

830† Studies in Milton G 5

A critical study of the poetry and prose of John Milton, viewed against his social and literary background.

831 Studies in the Age of Dryden G 5

A detailed study of Dryden and his contemporaries.

Wi Qtr.

832† Studies in the Age of Pope and Swift G 5

A detailed study of Pope, Swift, and their contemporaries.

833† Studies in the Age of Johnson G 5

A detailed study of Johnson, Boswell, and their contemporaries.

834† Studies in the 18th Century English Novel G 5

Intensive study of a selected critical or historical problem in English prose fiction from 1660 to 1800.

840 Studies in Romantic Poetry and Poetics G 5

Literary romanticism, as represented by one or more of the poets (Blake, Coleridge, Wordsworth, Byron, Shelley, and Keats), in relation to contemporary intellectual and political movements; topic varies from year to year.

Au Qtr.

841 Studies in Victorian Poetry G 5

The artistic values of the poetry, its place in the romantic tradition, its reflection of the contemporary intellectual and social milieu; topic varies from year to year.

Su Qtr.

842 Studies in 19th Century Prose G 5

Selected non-fictional prose, read as examples of literary art and as documents of the age's religious, political, social, and aesthetic thought; topic varies from year to year.

Wi Qtr.

843 Studies in the 19th Century English Novel G 5

Intensive study of some aspect of the novel in the period from Jane Austen to Thomas Hardy; topic varies from year to year.

Sp Qtr.

847 Studies in 20th Century Poetry G 5

An intensive study of a representative body of modern poetry, with emphasis on several major poets of England and America.

Sp Qtr. Prereq: Acquaintance with the major poets studied in 547 is assumed.

848 Studies in 20th Century British Fiction G 5

Tendencies in modern British fiction as seen in the works of such major figures as Conrad, Forster, Joyce, Virginia Woolf, and D. H. Lawrence.

Wi Qtr. Prereq: Acquaintance with modern continental novelists is recommended.

849 Studies in Major 20th Century Writers G 5

An intensive study of the works of one or two major poets, novelists, or dramatists, such as Conrad, Shaw, O'Neill, Eliot, Stevens, Joyce, Faulkner, and Hemingway.

Wi Qtr.

851 Studies in the American Renaissance G 5

An intensive study of several authors drawn from the following list: Cooper, Poe, Hawthorne, Melville, Emerson, Thoreau, and Whitman.

Sp Qtr. Prereq: 551 or equiv.

852 Studies in American Literature, 1865-1914 G 5

An intensive study of several major authors of the period, including Twain and James.

Su Qtr. Prereq: 552 or equiv.

853 Studies in Individual American Writers, 1800-1900 G 5

An intensive study of the works of a single major American author of the 19th century; author varies from year to year.

Au Qtr.

855 Studies in 20th Century American Fiction G 5

An examination of the development of 20th century American fiction as seen in the works of several central novelists such as Faulkner, Fitzgerald, and Hemingway.

Au Qtr.

870 Studies in Folklore G 5

Intensive study of some particular aspect of folklore.

Au Qtr.

872 Structural Analysis of English Expository Prose G 3

Au Qtr. Prereq: Permission of director.

873† Principles and Methods of Literary Analysis G 3

Principles and methods of the study of English poetry, drama, and prose fiction.

Prereq: Permission of director.

874† Principles and Methods of Linguistic Analysis I G 5

A study of the phonology, grammar, and history of the English language as they relate to the teaching of composition and literature.

875† Principles and Methods of Linguistic Analysis II G 5

A study of psycholinguistics, sociolinguistics, and stylistics as they relate to the teaching of composition and literature.

Prereq: 874 or equiv.

876† Studies in Critical Theory G 5

A review of theory and practice in some of the principal forms of literary analysis.

877† Advanced English Grammar G 5

An advanced approach to the grammar and the grammars of English and to their application to teaching and writing.

Prereq: Grad standing and one of the following: 669, 671, 672, Linguist 600, 601, Communic 752, or equiv.

878 History of the English Language G 5

An advanced approach to the history of English, with emphasis on inner history as well as its outer matrix, and its place among the world's languages.

Sp Qtr. Prereq: Grad standing, and one of the following: 669, 671, 672; Linguist 600, 601, Communic 752, or equiv.

Medieval and Renaissance Culture

See Medvl and Renais S 888.

Medieval and Renaissance Literature

See Medvl and Renais S 889.

894 Group Studies G 2-5

Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

General Prerequisites for Courses Numbered 900

Prerequisites: 15 hrs of English on the 800 level.

910† Research in the Medieval Period I G 5

Individual research in a major aspect of Old and Middle English literature.

911† Research in the Medieval Period II G 5

Continuation of 910.

Prereq: 910.

920 Research in the English Renaissance I G 5

Individual research in the literature of the English Renaissance.

Au Qtr.

921 Research in the English Renaissance II G 5

Continuation of 920.

Wi Qtr. Prereq: 920.

933† Research in Restoration and 18th Century Literature I G 5

Individual research in English literature and ideas of the period 1660-1798.

934† Research in Restoration and 18th Century Literature II G 5

Continuation of 933.

Prereq: 933.

940 Research in 19th Century Literature I G 5

Reading and research in the literary production of the century and its intellectual and social backgrounds.

Au Qtr.

941 Research in 19th Century Literature II G 5

Continuation of 940.

Wi Qtr. Prereq: 940.

947† Research in 20th Century Literature and Cultural History I G 5

Individual research in British and American literature of the 20th century.

948† Research in 20th Century Literature and Cultural History II G 5

Continuation of 947.

Prereq: 947.

950† Research in American Literature and Cultural History before 1900 I G 5

Individual research in problems in American literature before 1900.

951† Research in American Literature and Cultural History before 1900 II G 5

Continuation of 950.

Prereq: 950.

970 Research in Literary Theory and Forms I G 5

Reading and research in literary theory and the forms of English and American literature.

Au Qtr. 2 2-hr cl. Prereq: 15 cr hrs in English at the 800-level.

980 Bibliography and Method G 5

For advanced grad students in the methods and tools of literary research.

Au, Wi Qtrs.

982† Textual Criticism and Editing G 5

Evaluation of literary editorial methods, past and present; training in skills requisite to the textual critic and scholarly editor; practice in textual editing.

Prereq: 980.

993 Individual Studies G 1-15

Doctoral students may register for individual study in areas not normally covered by courses.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept grad committee. Repeatable to a maximum of 30 cr hrs.

998 Research in English: Thesis G Arr

Preparation for the master's comprehensive examination, and research for the thesis.

Su, Au, Wi, Sp Qtrs.

999 Research in English: Dissertation G Arr

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Entomology

Office: 103 Botany and Zoology Building, 1735 Neil Avenue, 422-8209

200 General Entomology

The biology of insects; form, function, classification, behavior, and ecological relations, including effect on man. Johnston, Stairs, Triplehorn, Briggs, and Foster.

200.01 Lecture U 3

Au, Wi, Sp Qtrs. 3 cl. Prereq: Biology 100, Botany 110, Zoology 110, or Zoology 201, or equiv with written permission of instructor. Not open to students with credit for 200.

200.02 Laboratory U 2

Au, Wi, Sp Qtrs. 2 2-hr labs. Prereq or concur: 200.01. Not open to students with credit for 200.

294 Group Studies U 1-5

Group studies in the field of the chosen problem. Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

361 Apiculture U 5

The principles of management of honeybees in the production of honey, wax, package-bees, and queens and in pollinating crops of economic importance. Rothenbuhler.

Sp Qtr. 3 cl, 2 2-hr labs.

460 Economic Entomology**460.01 Lecture U 3**

Survey of insects and relatives that affect public health, crops, livestock, and the home; control methods, environmental considerations. Horn, Hink, Triplehorn, and Holdsworth.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Biology 100, Botany 110, or Zoology 110. Not open to students with credit for 460.

460.02 Laboratory, General U 2

Examination of specimens of main economic orders, and important pest species.

Au, Wi, Sp Qtrs. 2 2-hr labs. Prereq or concur: 460.01. Not open to students with credit for 460.

460.03 Laboratory, Horticultural Insects U 2

Examination of major arthropod pests of horticultural crops; emphasis on identification and control.

Wi Qtr. 2 2-hr labs. Prereq or concur: 460.01 or equiv with written permission of instructor. Not open to students with credit for 561.

461 Forest Entomology U 3

Insects and other arthropods in the forest as they relate to effective management for maximum production of wood products and sustained preservation of forests and parklands.

Wi Qtr. 3 cl. Prereq: Botany/Zoology 110, Botany 112; Forestry 223 recommended.

500 Entomology for Biology Majors U G 5

The biology, morphology, metamorphosis and habits of insects; methods of collecting, preserving, culturing and identifying the more important families. Hink.

Su Qtr. 3 cl, 2 2-hr labs. Not open to students with credit for 200, 200.01, or 200.02.

531 Pesticides, The Environment and Society U G 3

The chemical, physical, and toxicological properties of pesticides are related to movement in the environment, and to their biological and ecological effects. Collins.

Au Qtr. 3 cl. Prereq: 5 cr hrs in organic chem and 10 cr hrs in biological sciences at the 200 level or above.

532 Pesticide Regulations U G 2

Study and discussion of Ohio and U.S. pesticide regulations; rationale of the regulations will be correlated with the biological and environmental effects of pesticides. Collins.

Au Qtr. 2 cl. Prereq or concur: 531.

602* Biology of the Honey Bee U G 3

The behavior, social organization, morphology, physiology, reproduction, diseases, and genetics of the honey bee studied from a comparative and evolutionary viewpoint. Rothenbuhler.

Sp Qtr. 3 cl. Prereq: 200.01 and Genetics 140 or equiv.

611 Field Entomology U G 5

Deals primarily with collecting, identification, and field methods; field trips are made to various islands of Lake Erie and the mainland.

Su Qtr (1st term). Given only at Franz Theodore Stone Laboratory. 3 all-day cl.

612 Aquatic Entomology U G 5

Designed for preparation in the teaching of biology or for research on aquatic resources; taxonomy and ecology of immature and adult aquatic insects are emphasized. Britt.

Su Qtr. *Given only at Franz Theodore Stone Laboratory. 3 all-day cl. Sp Qtr. Given only on Columbus campus. 4 2-hr cl. Prereq: 200.01 or 611 or equiv.

621 External Morphology of Insects U G 5

A study of the comparative external morphology of insects with special emphasis on evolutionary trends and on taxonomic application of morphology.

Au Qtr. 2 cl, 6 hrs lab. Prereq: 200.01 and 200.02, or equiv.

631 Insect Physiology U G 5

The general physiology of insects and other arthropods; the laboratory will stress the use of insects to demonstrate fundamental physiological processes. Denlinger.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: 200.01 or equiv and Chem 235, or 241 and 243, or equiv.

641 Insect Ecology U G 5

The distribution, abundance, population regulation, plant-insect interactions, and species survival patterns of insects are analyzed in relation to microenvironment and ecosystems. Stairs.

Sp Qtr. 3 2-hr lect/labs. Prereq: 200.02, Zoology 313.01 or equivs.

660 Advanced Economic Entomology U G 5

Theory and practice of pest population management, emphasizing current research and field studies involving practical experience with insect control. Horn.

Sp Qtr. 3 cl, 2 2-hr labs, field trips. Prereq: 460.02 and Zoology 313.01, or equiv with written permission of instructor.

661 Medical Entomology U G 5

Arthropod agents and vectors of vertebrate disease: life cycles, behavior, pathogenesis, identification, control; arthropod-pathogen and arthropod-vertebrate relationships; arthropod-borne disease systems. Foster.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: 200.02 and Zool 610 recommended.

662 Principles of Insect Toxicology U G 5

The properties of insecticides, modes of action, metabolism, toxicity factors, joint action, resistance, experimental procedures and interpretation of data. Collins.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 631 or equiv or permission of instructor.

670 General Acarology U G 4

An introduction to the morphology, development, and general biology of mites; laboratory consists of a taxonomic review of the families of Acari. Johnston.

Su Qtr. 1 cl, 4-hr lab.

693 Individual Studies U 1-5 G 1-10

Individual work in the field of the chosen problems. Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs for undergrads and to a maximum of 30 cr hrs for grads. No more than 5 cr hrs may be counted toward an undergrad entomol major.

694 Group Studies U G 2-5

Group work in the field of the chosen problems. Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs for undergrads and to a maximum of 20 cr hrs for grads.

741* Insect Pathology U G 5

Diseases of insects, both infectious and non-infectious, and the resulting pathologies; the epizootiology of diseases and use of microorganisms for insect population management. Hink.

Sp Qtr. 3 cl 2-2-hr labs. Prereq: Micrbiol 601 or 607 or equiv.

751†* Systematic Entomology U G 5

A survey of all orders except Diptera, Lepidoptera, and Hymenoptera, with emphasis on the determination of insects to family and beyond; collecting and preserving insects. Borror.

Wi Qtr. 2 cl, 6 lab hrs. Prereq: 621.

752* Systematic Entomology U G 5

Continuation of 751, covering the Diptera, Lepidoptera, and Hymenoptera.

Wi Qtr. 2 cl, 6 lab hrs. Prereq: 621.

753†* Immature Insects U G 5

A survey of immature stages of insects with emphasis on the anatomy and taxonomy of holometabolous larvae. Britt.

Wi Qtr. 1 cl 4-2-hr labs. Prereq: 751 and 752 or equiv and permission of instructor.

H783 Honors Course U 3-5

A program of reading and research for each student with individual conferences, reports, and Honors thesis.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the courses in biological sciences and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degrees BA or BS *with distinction* in entom. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs.

795 Special Topics in Entomology U G 1-3

Seminar on publications, current research or research techniques in the following topics:

- a—Acarology
- b—Apiculture
- c—Behavior
- d—Biological control
- e—Ecology
- f—Economic entomology
- g—Genetics
- h—Medical entomology
- i—Pathology
- j—Physiology-toxicology
- k—Research methods—data analysis
- l—Systematics—evolution

Su, Au, Wi, Sp Qtrs. 1, 2, or 3 cl. Prereq: 25 cr hrs in biological sciences at 200 level or above. Repeatable to a maximum of 10 cr hrs.

800 Entomology Seminar G 1

Faculty, graduate students, and outside speakers will participate; topics: recent advances in various entomological fields.

Au, Wi, Sp Qtrs. 1 1½-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

802†* Research Methods: Living Insects G 5

Current field and laboratory research methods of trapping, sampling, handling, and rearing insects; conducting life history studies; and measuring environmental factors.

Sp Qtr. 3 cl, 2 2-hr labs. Prereq: Permission of instructor.

821* Internal Morphology of Insects G 5

Internal structures of insects, including anatomy, function, histology, embryology, and metamorphosis; laboratory includes preparation of permanent microscopic slides of insect tissues. Denlinger.

Sp Qtr. 2 cl, 2 3-hr labs. Prereq: 621.

831†* Advanced Insect Physiology G 5

Topics include insect integument, water balance, excretion, digestion, nutrition, respiration, growth and metamorphosis; the project type laboratory provides experience in techniques of insect physiology. Denlinger.

Wi Qtr. 2 cl, 2 3-hr labs. Prereq: 631 or Zoology 432, or equiv.

841 Biological Control G 5

Reports and discussions on the predators, parasitoids and microbial pathogens affecting plants and invertebrates, particularly insects. Briggs.

Wi Qtr. 3 cl, 2-hr lab. Prereq: 631, 641 and 660 recommended.

870 Medical-Veterinary Acarology G 4

The mites associated with man, domestic animals, and wildlife, stressing their ecology and behavior in relation to transmission of viral, rickettsial, bacterial, and protozoan diseases. Johnston.

Su Qtr. 1 cl, 4-hr lab. 3 hrs cl-lab daily (Su 3 wks).

871 Agricultural Acarology G 4

An intensive review of the mites associated with crops, ornamental plants, and stored food products with emphasis on taxonomy and ecology of these animals. Johnston.

Su Qtr. 1 cl, 4-hr lab. 8 hrs cl-lab daily (Su 3 wks).

891 Interdepartmental Seminar in Environmental Biology G 2

Selected topics treating the environmental aspects of organisms, populations, and ecosystems as they may relate to time, space, and human activities.

Su, Au, Wi Sp Qtrs. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs. Given cooperatively by Botany, Entomology, Microbiology, and Zoology.

896 Interdepartmental Seminar in Polar and Alpine Studies G 1-3

See Interdepartmental Seminars.

897 Interdepartmental Seminar in Natural Resources G 1

See Interdepartmental Seminars.

999 Research in Entomology G Arr

Research for thesis and dissertation purposes only. Su, Au, Wi, Sp Qtrs.

Environmental Biology

Office: 162 Botany and Zoology Building, 1735 Neil Avenue

694 Group Studies U G 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

Interdepartmental Seminar in Environmental Biology

See Botany, Entomology, Microbiology and Zoology 891.

999 Research in Environmental Biology G Arr

Research for thesis or dissertation purposes only. Su, Au, Wi, Sp Qtrs.

Family Medicine

Office: 0114 University Hospital Clinic, 456 Clinic Drive, 422-0210

793 Individual Studies in Family Practice P 4, 8, 16 or 24

Experience with family physician-preceptor or Family Practice Residency Programs. Student must achieve objectives which fall within the curriculum objectives of the Dept of Family Medicine. Williams.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Med Coll 663 and written permission of instructor. Repeatable to a maximum of 24 cr hrs.

Family Relations and Human Development

Office: 315 Campbell Hall, 1787 Neil Avenue, 422-7705

294 Group Studies U 2, 3 or 5

Selected topics in family relations and human development.

Prereq: Open to students who meet dept's stated prereqs. Not open to students with maximum allowable credit for 294.10 or 294.12 or Home Ec 294.10 or 294.12. Repeatable to a maximum of 10 cr hrs.

360 Family Development U 5

The dynamics of family interaction at each stage of the life cycle; emphasis on developmental tasks, socio-economic and cultural influences and other family differences.

Au, Wi, Sp Qtrs. 4 cl, 1 hr arr. Prereq: 10 cr hrs of social science.

361 Introduction to Child Development U 5

Study of the nature, nurture and development of children from conception through the beginning school years. Griffing.

Au, Wi Qtrs. 3 cl, 2 hrs arr. Prereq: Psych 100 or equiv with written permission of instructor and 2nd yr standing. Open only to dept majors. Not open to students with credit for 362 or Home Ec 362.

363 Infant Guidance and Care U 4

Considerations in planning for children (conception through age two) at home and in groups. Curriculum content and environment organization to meet developmental needs. Dickerscheid.

2 1½-hr cl, 2 hrs arr. Prereq: 360 (or Home Ec 360) and 361 or 362 or equiv with written permission of instructor. Not open to students with credit for Home Ec 363 or 663 or Home Ec 663.

364 Applied Life Span Analysis U 4

Survey of human development across the life span directed toward an applied understanding of the individual and forces that shape development.

Au, Sp Qtrs. 3 cl, 2 hrs arr. Prereq: Psych 100 or 300 and 2nd yr standing.

461 Guidance of Young Children in Groups U 3

Application of principles of development to guidance of children in groups; modification of experiences for age level, ability, group and individual needs. Bolig.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 361 or 362 or Home Ec 362 or 364 or Psych 550 or Ed-E&MC 460. Not open to students with credit for 462 or Home Ec 462.

464 Curriculum Planning: A Child Development Model U 3

In-depth examination of the child development model and implication for the planning, implementation and evaluation of teacher-directed activities for young children. Nash.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 461; concur 465. Open only to majors in dept and H Ec Edu (child care services option). Not open to students with credit for 462 or Home Ec 462; and/or 463 or Home Ec 463.

465 Nursery School Practicum U 2

Participation in the nursery school as a student teacher.

Su, Au, Wi, Sp Qtrs. 1 cl, 1 3-hr lab. Prereq: 361 or 362 or Home Ec 362 or 364; and 461 or 462 or Home Ec 462.

465.01 Preschool/Day Care Practicum

Application of theory included in 461 and 464.

Concur: 464. Open only to FM&HU DV child development option and H Ec Edu child care services option.

465.02 Group Care Practicum

Application of theory included in 461.

Open only to FM&HU DV family services option and H Ec Edu options other than child care services.

466 Seminar: Human Service Organizations U 3

Application of principles of family development to program planning; discussion of family needs and design of techniques to assess needs and ways to provide services.

Au, Sp Qtrs. 2 cl, 1 hr arr. Prereq: 360 (or Home Ec 360); concur 467. Open only to dept majors in family services option.

467 Practicum: Human Service Organizations U 2

Supervised participation in a human service organization with application of principles from 466.

Au, Sp Qtrs. One ½-day arr. Prereq: 360 (or Home Ec 360); concur 466. Open only to dept majors in family services option.

565 Supervised Preschool/Day Care Teaching U 10 or 15

Guided participation of students in the responsibilities and activities of preschool and day care teachers in centers with half day and/or full-day programs. Griffling.

Su, Au, Wi, Sp Qtrs. ½ day every day per qtr or 1 day every day per qtr. Prereq: 4th yr standing in dept and 2.25 cumulative point-hour ratio. Pre-registration 2 qtrs prior to supervised teaching.

589 Field Work U 5 or 10

Planned professional experience with children, youth or adults in a program or community agency.

Wi, Sp Qtrs. Prereq: 466 and 467 or 464 and 465.01, 2.25 cumulative point-hour ratio and written permission of instructor. Repeatable to a maximum of 10 cr hrs. Pre-registration 2 qtrs prior to field work. Not open to students with maximum allowable credit for 589.10 or 589.12 or Home Ec 589.10 or 589.12. Open only to dept majors.

593 Individual Studies U 2, 3 or 5

Problems in various phases of family relations and human development chosen for individual study.

Su, Au, Wi, Sp Qtrs. 1 or more conf. H593 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Prereq: Minimum of 6 cr hrs in subject matter of problem with cumulative point-hour ratio of 2.7 or written permission of instructor. Not open to students with maximum allowable credit for 593.10 or Home Ec 593.10. Repeatable to a maximum of 10 cr hrs.

598† Seminar in Child Development U 2

Review, interpretation, and evaluation of current literature and research in defined areas.

Wi Qtr. 1 cl. Prereq: 360 (or Home Ec 360) and 464 and sr standing. Repeatable to a maximum of 4 cr hrs. Not open to students with maximum allowable credit for 598 or Home Ec 598.

661 Observing and Recording Children's Behavior U G 3

Examination of the value of observation skills and methods of observing and recording children's behavior. Emphasis on developing observational skills for working with children.

Au Qtr. 1 2½-hr cl, 2 hrs arr. Prereq: 361 or 362 or Home Ec 362 or Psych 550, or Ed-E&MC 460 or equiv with written permission of instructor.

662 Advanced Child Development U G 3

Growth and development of children through adolescence with emphasis on maturation patterns and individual differences. Hock.

Wi Qtr. 2 cl, 2 hrs arr. Prereq: 361 or 362 or Home Ec 362 and Psych 550, and Sociol 434. Not open to students with credit for Home Ec 662.

663 Infant Development U G 3

Infant development during first two years of life with special consideration of bases of support for provision of effective care. Hock.

Sp Qtr. 1 2-hr cl, 1 2-hr lab arr. Prereq: 363 and Psych 550 and Sociol 434. Not open to students with credit for Home Ec 663.

665 Parenting U G 3

Identification and examination of current family systems of parent-child relations; emphasis on developing practical skills for working with parents and children.

Su, Wi Qtrs. 1 2½-hr cl. Prereq: Sociol 434 or 463 and 15 cr hrs of FM&HU DV courses.

667 Administration of Day Care Centers U G 3

Study of components of administration of day care centers, such as organizational structure, policies, curriculum, supervision, budget and funding, regulations and standards. Griffling.

Au, Sp Qtrs. 1 2-hr cl, 1 hr arr. Prereq: 465.01 or 465.02 or equiv with written permission of instructor. Not open to students with credit for Home Ec 667.

669 Alternative Strategies for Preschool Programs U G 3

Exploration of a variety of philosophies and resultant practices in caring for and educating young children in day care and nursery school situations. Dickerscheid.

Wi Qtr. 2 1½-hr cl. Prereq: 465.01 or 465.02 or equiv with written permission of instructor.

690 Workshop U G 4

Full time for 3 wks. Prereq: Written permission of instructor. Not open to students with maximum allowable credit for 690.10 or Home Ec 690.10. Repeatable to a maximum of 12 cr hrs.

694 Group Studies U G 2, 3 or 5

Selected topics in family relations and human development.

Prereq: Open to students who meet dept's stated prereqs. Not open to students with maximum allowable credit for 694.10 or 694.12 or Home Ec 694.10 or 694.12. Repeatable to a maximum of 10 cr hrs.

760 Family Relations and Human Development Research Process Analysis U G 3

Present historical overview of research methods and related conceptual issues relevant to study of family relations and human development; generate creative approaches to research problems. Hock.

Wi Qtr. 1 2½-hr cl. Prereq: 361 or 363 and Psych 550 and Sociol 434 or equiv with written permission of instructor. Not open to students with credit for Home Ec 760.

793 Individual Studies U G 2, 3 or 5

Problems in various phases of family relations and human development chosen for individual study.

Su, Au, Wi, Sp Qtrs. 1 or more conf. Prereq: Written permission of instructor. Not open to students with maximum allowable credit for 793.10 or Home Ec 793.10. Repeatable to a maximum of 15 cr hrs.

797 Interdepartmental Seminar U G 2-4

See Interdepartmental Seminars.

Not open to students with maximum allowable credit for Home Ec 797. Repeatable to a maximum of 6 cr hrs.

860 The Family: The Early Years G 3

Relationships and adjustments in family living with emphasis on the early and expanding stages of the family life cycle. Taylor.

Au Qtr. 1 2½-hr cl. Prereq: 25 cr hrs in sociol and psych, or equiv with written permission of instructor. Not open to students with credit for Home Ec 860.

861 The Family: Middle and Later Years G 3

The interrelationship and adjustment of families with emphasis on the middle and later years of the life cycle. Taylor.

Su, Sp Qtrs. 1 2½-hr cl. Prereq: 860 or Home Ec 860 or equiv with written permission of instructor.

862 Seminar in Family Relations and Human Development G 3 or 5

Topics to be announced.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl. Prereq: Grad standing in home ec and/or written permission of instructor. Not open to students with maximum allowable credit for 862 or Home Ec 862. Repeatable to a maximum of 15 cr hrs.

864 Contemporary Issues in Group Experiences for Young Children G 3

Identification and examination of current practices in group experiences for children under five; emphasis on current issues, relevant research and theory as related to curriculum design. Dickerscheid.

Sp Qtr. 1 2½-hr cl. Prereq: 15 cr hrs of child development and/or child psychology. Supervised student teaching or experience in nursery schools or day care centers.

894 Group Studies G 2, 3 or 5

Selected topics in family relations and human development.

Prereq: Open to students who meet dept's stated prereqs. Not open to students with maximum allowable credit for 894.10 or Home Ec 894.10. Repeatable to a maximum of 10 cr hrs.

899 Interdepartmental Seminar G 1-5

See Interdepartmental Seminars.

Not open to students with maximum allowable credit for Home Ec 899.

993 Individual Studies G 2, 3 or 5

Problems in various phases of family relations and human development chosen for individual study.

Su, Au, Wi, Sp Qtrs. 1 or more conf. Prereq: Written permission of instructor. Not open to students with maximum allowable credit for 993.10 or Home Ec 993.10. Repeatable to a maximum of 15 cr hrs.

998 Research: Thesis G Arr

Research for master's thesis.

Su, Au, Wi, Sp Qtrs.

999 Research: Dissertation G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Food Science and Nutrition

Office: 122 Vivian Hall, 2121 Fyffe Road, 422-6281

100 Food and Mankind U 5

Food and nutrition in modern civilization; role of science, industry, and government in meeting domestic and world needs; elements of food acceptance, quality, processing and protection. Chism and Mangino.

Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 202.

General Prerequisites for Courses Numbered 200

Unless otherwise indicated, the prerequisites for 200-level courses are 45 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-199.

289 Food Industries Field Experience U 3

Ten weeks practical experience or equivalent in an approved food plant or laboratory; written report required. Kenyon.

Su, Au, Wi, Sp Qtrs. Open only to students majoring in food science and nutrition.

General Prerequisites for Courses Numbered 300 and 400

Unless otherwise indicated, the prerequisites for 300 and 400-level courses are 90 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-399.

Introduction to Food Process Engineering

See Ag M&Sys 381. Offered in cooperation with Agricultural Engineering (Agricultural Mechanization and Systems)

Marketing Dairy Products

See Agr Econ 426. Offered in cooperation with Agricultural Economics.

493 Individual Studies U 3-5

Individual study course to permit undergraduate students to explore in depth selected areas of food science and nutrition.

Su, Au, Wi, Sp Qtrs. 9-, 12-, or 15-hr lab. H493 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Prereq: Junior standing. Repeatable to a maximum of 10 cr hrs.

General Prerequisites for Courses Numbered 500

Unless otherwise indicated, the prerequisites for 500-level courses are 15 cr hrs in courses in the same discipline numbered 200 or higher or 10 cr hrs in courses numbered 200 or higher in the same discipline, plus 10 cr hrs in courses numbered 200 or higher in specific allied disciplines; or baccalaureate degree.

521 Food Components and Analysis U G 3

Composition and chemical properties of foods and food components; evaluation and utilization of analytical methods; effect of processing; regulations, laws, and agencies. Chism.

Au Qtr. 3 cl. Prereq: Chem 235 or 242.

522 Food Components and Analysis: Laboratory U G 3

Application of modern analytical methods to foods and food components; determination of chemical phenomena and properties of foods; project studies, data interpretation and report writing. Chism.

Au, Wi Qtrs. 1 cl, 2 3-hr lab. Prereq or concur: 521.

531 Sensory Properties of Foods U G 3

Fundamentals of sensory perception, taste and odor classification and threshold values; subjective and objective evaluation of foods; panel selection and interpretation of results; industrial applications. Lindamood.

Wi Qtr. 3 2-hr lab. Prereq: 521 or equiv.

541 Physical Properties of Foods U G 4

Elements of identification and measurement of physical properties of foods and application to food systems. Blaisdell.

Au Qtr. 2 cl, 2-hr lab. 2-hr workshop. Prereq: 521; prereq or concur: Ag M&Sys 381.

551 Technologies of Dairy Foods U G 5

Scope, trends, and practices of industrial dairying; dairy foods formulation and processing; composition, quality, and materials control; distribution; health and nutritional aspects. Kenyon.

Sp Qtr. 3 cl, 22-hr lab. Prereq: 521, 522; Micrbiol 509 or 601; permission of instructor. Not open to students with credit for 631, 633, 634, 637.

Food Process Controls and Instrumentation

See Ag M&Sys 583. Offered in cooperation with Agricultural Engineering (Agricultural Mechanization and Systems).

General Prerequisites for Courses Numbered 600

Unless otherwise indicated, the prerequisites for 600-level courses are 15 cr hrs in courses in the same discipline numbered 300 or higher, or 10 cr hrs in courses numbered 300 or higher in the same discipline, plus 10 cr hrs in courses numbered 300 or higher in specified allied disciplines.

621 Food Additives U G 3

Chemical and physical nature of food additives; functions and effects on chemical, rheological, microbiological, and nutritional properties of foods. Harper.

Au Qtr. 3 cl. Prereq: 15 cr hrs in food science or related area.

622 Food Sanitation and Protection U G 5

Principles of sanitation applicable in the production, processing, distribution, and handling of food; relationship to food quality and safety. Mikolajcik.

Au, Sp Qtrs. 4 cl, 1 3-hr lab. Prereq: Micrbiol 509 or 601.

631* Food Systems I: Fluid Foods U G 3

Integration of science and engineering principles to fluid foods and their unit operations, with emphasis on protein-lipid fluid food systems. Harper.

Wi Qtr. 3 cl. Prereq: 541, Ag M & Sys 381 or permission of instructor.

633* Food Systems II: Concentrated and Frozen Foods U G 3

Principles of science and engineering of concentrated and frozen foods and their unit operations. Hansen.

Sp Qtr. 3 cl. Prereq: 631 or permission of instructor.

634†* Food Systems III: Fermented and Lipid Foods U G 3

Chemical, physical, and microbiological phenomena of fermented and lipid foods as related to manufacturing and storage practices and products characteristics. Kristoffersen.

Wi Qtr. 3 cl. Prereq: 521, Micrbiol 509 or 601, or permission of instructor.

637 Food Systems IV: Laboratory U G 3

Unit processes in fundamentals of food systems and food fabrication and development; equipment use; chemical, physical, and microbiological measurements of product control and storage changes. Kenyon.

Au, Wi Qtrs. 1 cl, 23-hr labs. Prereq: 631, 633 or 634 or concur. Repeatable to a maximum of 6 cr hrs. Not open to students with credit for 632.

Advanced Food Process Engineering

See Agri Eng 684. Offered in cooperation with Agricultural Engineering.

692 Workshop in Milk and Food Sanitation U G 1-2

Five day in-depth program on fundamentals of milk and food protection. Designed for individuals interested in food processing, distribution; quality control, public health, and regulatory activities. Lindamood.

Sp Qtr. 15 or 30 hrs cl contact during the week between winter and spring qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 3 cr hrs.

693 Individual Studies U G 3-5

Individual project studies of current problems; planning, conducting, and reporting research.

Su, Au, Wi, Sp Qtrs. 9-, 12-, or 15-hr lab. H693 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Prereq: Food science and nutrition 4th yr standing and permission of instructor. Repeatable to a maximum of 10 cr hrs.

695 Seminar U G 3

Analysis of technical problems in food science; fostering of creative thinking to the approach and solution of problems; preparation and oral presentation of papers. Harper.

Au Qtr. 3 cl. Prereq: Food science and nutrition 4th yr standing.

General Prerequisites for Courses Numbered 700

Unless otherwise indicated, the prerequisites for 700-level courses are 15 cr. hrs in courses in the same discipline numbered 400 or higher, plus additional specified course(s) numbered 600 or higher.

701†* Food Contaminants and Toxicants U G 4

Biological and chemical contaminants and naturally occurring toxicants in foods of public health significance; protection of foods. Mikolajcik.

Au Qtr. 4 cl. Prereq: Micrbiol 509 or 601.

702* Spore-Forming Bacteria in Food G 5

Aerobic and anaerobic spore-forming bacteria in food; fundamentals of sporulation and germination processes; significance to food industry; control. Mikolajcik.

Wi Qtr. 3 cl, 2 2-hr lab. Prereq: Micrbiol 636. Not open to students with credit for 801.

723* Food Structure and Interactions U G 5

Microstructure and texture of foods; relationship to food components and interactions, and physical properties of foods; application of light and electron microscopy. Hansen.

Wi Qtr. 3 cl, 2 3-hr labs. Prereq: 15 cr hrs in food science or related areas.

731* Food Processing Wastes: Treatment and Utilization U G 3

Chemical, physical, and biological composition of food plant wastes, principles of waste treatment; alternative processes and comparative efficiencies; utilization of waste products. Blaisdell and Harper.

Sp Qtr. 3 cl. Prereq: Biochem 511, Micrbiol 509 or 601.

741†* Food Thermodynamics U G 3

Thermodynamic, kinetic, and transport phenomena in food systems. Blaisdell.

Wi Qtr. 3 cl. Prereq: 723, Biophys 642, Chem 521 or permission of instructor.

761 Advanced Nutrient Utilization I U G 5

In-depth treatment of digestion, absorption, transport, and utilization of dietary carbohydrates and fat for energy production and fat deposition in man and other higher animals. Allred.

Sp Qtr. 5 cl. Prereq: Biochem 511 or equiv and Hum Ntr 310 or Animi, Dairy, Pltry Sc 430 or equiv.

762 Advanced Nutrient Utilization II U G 5

In-depth treatment of digestion, absorption, transport, and utilization of proteins, amino acids, and vitamins in man and other higher animals; energy reactions and requirements. Allred.

Sp Qtr. 5 cl. Prereq: 761.

794 Group Studies U G 3-5

Intensive study of selected areas of food science not provided in other courses and appropriate to the needs of the students.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs.

General Prerequisites for Courses Numbered 800 and 900

Unless otherwise indicated, the prerequisites for 800 and 900-level courses are 30 cr hrs in courses in the same discipline, or 20 cr hrs in the same discipline, plus 25 cr hrs in specified allied disciplines.

803* Food Fermentations G 5

Principles of food fermentation; pathways and kinetics of microbial reactions; design and control of fermentation reactors. Blaisdell and Harper.

Su Qtr. 3 cl, 2 3-hr lab. Prereq: 631, 633 or permission of instructor. Not open to students with credit for 830.04.

821†* Food Lipids G 3

Chemical, physical and biological properties of food lipids. Mangino.

Au Qtr. 3 cl. Prereq: 634, 723 or permission of instructor. Not open to students with credit for 830.03.

822†* Food Proteins G 3

Sources of chemical, physical, and biological properties of food proteins; effect of food composition, handling and processing of protein characteristics and functionalities. Mangino.

Sp Qtr. 3 cl. Prereq: 723 or permission of instructor. Not open to students with credit for 830.02.

833 Research Methods in Food Science G 5

Principles and application of selected instrumental methods of analysis of food systems; visual, ultraviolet, infrared spectroscopy; partition, absorption, gel permeation, gas liquid chromatography, electrophoresis, radioisotopes. Harper.

Su Qtr. 3 cl, 2 3-hr lab. Prereq: Permission of instructor. Not open to students with credit for 830.05.

850 Seminar G 1

Graduate student-staff participation in a study of teaching and research trends and opportunities; critical analysis of research approaches, findings, and publications.

Au, Wi, Sp Qtrs. 1 cl.

850.01 Food Science**850.02 Nutrition****861 Topics in Advanced Nutrition G 3**

Systematic treatment and evaluation of areas of publications of current interest in nutrition; topics will be announced quarterly. Allred.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 762. Repeatable to a maximum of 9 cr hrs.

898 Interdepartmental Seminar in Nutrition G 1

See Interdepartmental Seminars.

Sp Qtr.

993 Individual Studies G 1-5

Research experience and preparation of technical paper.

Su, Au, Wi, Sp Qtrs. Prereq: 15 cr hrs of grad level courses in food science or nutrition. For Plan B, MS degree students only. Repeatable to a maximum of 10 cr hrs.

998 Research: Thesis G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

999 Research: Dissertation G Arr

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Forestry

School of Natural Resources

Office: 140 Howlett Hall, 2001 Fyffe Court, 422-2816

General Prerequisites for Courses Numbered 200

Unless otherwise indicated, the prerequisites for 200-level courses are 45 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-199.

221 Conifer-Hardwood Dendrology U 5

Study of principal forest tree species in the United States with emphasis on identification, range, habitat, reproductive characteristics, silvical characteristics and importance. Cowen.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: Botany 112 and written permission of instructor.

223 Silvics U 5

A study of the individual and interacting effects of environmental and genetic factors on forest tree and forest community production.

Wi Qtr. 5 cl, plus 2 all-day Saturday field trips. Prereq: Botany 112; prereq or concur: Agronomy 240 or equiv with written permission of instructor.

General Prerequisites for Courses Numbered 300 and 400

Unless otherwise indicated, the prerequisites for 300- and 400-level courses are 90 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-399.

310 Introductory Forestry U 5

An introduction to American forestry; the character and occurrence of American forests; forest biology; cultivating and measuring the forest. Touse.

Au Qtr. 3 cl, 2 2-hr lab.

321 Silviculture U 5

A study of manipulation of the forest ecosystems to assure establishment, growth, composition and quality of forest stands in accordance with ownership objectives. Cowen.

Au Qtr. 5 cl, 1 or 2 all-day field trips. Prereq: 223; prereq or concur: 221; and written permission of instructor.

323 Forest Biometry I U 5

A study of the quantitative decision tools necessary to measure the forest resource; confidence and probability measures of land area, timber, water, wildlife and recreation. Kasile.

Sp Qtr. 3 cl, 2 2-hr lab. Prereq: 321, Stat 125 or Genetics 650 or equiv with written permission of instructor.

325 Forest Economics, Policy, and Management U 5

A study of concepts associated with management of forest properties; forest growth, regulation, valuation; the role of forest policy and economics in problem solving. Mitchell.

Wi Qtr. 5 cl. Prereq: 323 and one course in economics, or written permission of instructor.

423* Forest Biometry II U 5

Principles and methods of sampling and data processing relevant to decision making in forest resource management; characterization of social benefits and survey errors. Kasile.

Au Qtr. 3 cl, 2 2-hr lab. Prereq: 323 or equiv with written permission of instructor.

425 Forest Resource Management U 5

A study of forest resource management as a manipulation of forest ecosystems related to socio-economic systems; use of analytical concepts and systems analysis. Mitchell.

Sp Qtr. 4 2-hr lec-labs. Prereq: 325 or equiv with written permission of instructor.

431 Forest Industries I U 5

Identification of the important timber species based upon wood structure and properties; defects in wood; moisture relationships and drying techniques; the principles of gluing. Touse.

Au Qtr. 5 cl. Prereq: 221.

432 Forest Industries II U 5

A detailed study of the harvesting and manufacturing processes used to produce forest products; laws governing workshop safety and environmental pollution; transportation of forest products. Touse.

Wi Qtr. 5 cl. Prereq: 431.

433 Analysis of Forest Industry Management U 5

A survey of the common problems encountered by managers of the wood-using industries; emphasis on sources of information and methods of solution. Touse.

Sp Qtr. 5 cl. Prereq: 431 and 432.

General Prerequisites for Courses Numbered 500

Unless otherwise indicated, the prerequisites for 500-level courses are 15 cr hrs in courses in the same discipline numbered 200 or higher, or 10 cr hrs in courses numbered 200 or higher in the same discipline, plus 10 cr hrs in courses numbered 200 or higher in specified allied disciplines; or baccalaureate degree.

593 Individual Studies U G 2-5

Special problems in the field of forestry and forest products.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. H593 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Repeatable to a maximum of 10 cr hrs.

General Requisites for Courses Numbered 800 and 900

Unless otherwise indicated, the prerequisites for 800- and 900-level courses are 30 cr hrs in courses in the same discipline, or 20 cr hrs in the same discipline, plus 25 cr hrs in specified allied disciplines.

999 Research in Forestry G Arr

Research for thesis and dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

French

Office: 248 Dieter Cunz Hall of Languages, 1841 Millikin Road, 422-5842

101 Elementary French I

Introduction to French; development of listening, reading, speaking, and writing skills.

Su, Au, Wi, Sp Qtrs.

101.01 Classroom Track U 5

Students must register for and complete 5 cr hrs during the quarter.

101.02 Individualized Track U 1-5

Students register for and complete from one to five credit hours during the quarter. Students who complete five hours before the end of the quarter may proceed to 102.02. In 101.02, 102.02, and 103.02 progress is sequential from one credit hour to the next, with proficiency at the level of 80% required for advancement.

102 Elementary French II

Continuation of 101, further development of listening, reading, speaking, and writing skills.

Su, Au, Wi, Sp Qtrs.

102.01 Classroom Track U 5

Prereq: 101.01 or 5 cr hrs of 101.02. Students must register for and complete 5 cr hrs during the quarter.

102.02 Individualized Track U 1-5

Prereq: Grade of B- or above in 101.01 or 5 cr hrs in 101.02 or permission of instructor. Students may register for 101.02 and 102.02 concurrently with permission of instructor. Students who complete 5 hrs before the end of the quarter may proceed to 103.02. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement.

103 Intermediate French I

Continued study of French; development of listening, reading, speaking, and writing skills; readings based on contemporary French culture and literature.

Su, Au, Wi, Sp Qtrs.

103.01 Classroom Track U 5

Prereq: 102.01 or 5 cr hrs of 102.02 or 110. Students must register for and complete 5 cr hrs during the quarter.

103.02 Individualized Track U 1-5

Prereq: Grade of B- or above in 102.01 or 5 cr hrs of 102.02 or permission of instructor. Students may register for 102.02 and 103.02 concurrently with permission of instructor. Students register for and complete from 1 to 5 cr hrs during the quarter. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement.

104 Intermediate French II U 5

Prereq: 103 or 103.01 or 5 cr hrs of 103.02 or 112. The following courses are not open to students with credit for 104, and only one of the decimal subdivisions may be taken for credit.

104.01 Basic Course

Reading of French short stories, plays and novels with attention to literary appreciation; development of basic language skills.

Su, Au, Wi, Sp Qtrs. 5 cl. Students not planning to continue in French may substitute any one of the following decimal subdivisions for 104.01. Not open to students with credit for 104 or any other 104 decimal subdivision. Course conducted in French.

104.02 Conversation

Emphasis on speaking and aural comprehension with special attention to practical situations.

Au, Sp Qtrs. 5 cl. Not open to students with credit for 104 or any other 104 decimal subdivision.

104.03 The French Now

Readings in current periodicals, newspapers, and other primary sources; texts in French, discussion in French and English.

Au, Sp Qtrs. 5 cl. Not open to students with credit for 104 or any other 104 decimal subdivision.

104.04 Civilization

Aspects of French civilization: geography, history, social developments, and the arts; readings and discussion in French.

Wi Qtr. 5 cl. Not open to students with credit for 104 or any other 104 decimal subdivision.

104.05 French Attitudes toward Science and Philosophy

Readings in science, philosophy, and literature; texts in French; discussion in French and English.

Sp Qtr. 5 cl. Not open to students with credit for 104 or any other 104 decimal subdivision.

104.06 Scientific Reading

Intensive reading of scientific materials from current French journals in the physical and biological sciences.

Wi Qtr. 5 cl. Not open to students with credit for 104 or any other decimal subdivision.

105 Elementary French Conversation and Composition U 5

Intensive practice in oral and written French, based on texts and periodicals concerned with French life of today; grammar and idiom review.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 104. Course conducted in French.

110 Intensive Elementary French U 5, 10

Elementary French for students wishing to acquire the basic skills in one quarter; intensive drill in form, syntax, vocabulary, and idiom; equivalent to 101 and 102.

Au, Wi, Sp Qtrs. 10 cl. Prereq: Permission of dept. Not open to students with credit for 102. Students with credit for 101 or equiv may not register for more than 5 cr hrs.

112 Intensive French U 5, 10, 15

Elementary and intermediate French; intensive drill in form, syntax, vocabulary, and idiom; reading of short stories, novels, and plays.

Su Qtr. 15 cl. Enrollment limited to 25 students. Prereq: Permission of chairman. Full time of student and full fees required. Equiv of 101, 102, 103. Students with credit for 101 or the equiv may not register for more than 10 cr hrs. Students with credit for 101 and 102 or the equiv may not register for more than 5 cr hrs. Students with credit for 103 or the equiv may not register for credit.

162 Elementary-Intermediate French for Selected Students U 5

Wi Qtr. 5 cl. Prereq: Grade of A in 101 and permission of dept. Successful completion of 101-162-163 fulfills the Arts and Sciences foreign language requirement and satisfies prereq for 400-level literature courses.

163 Elementary-Intermediate French for Selected Students U 5

Sp Qtr. 5 cl. Prereq: 162. Successful completion of 101-162-163 fulfills the Arts and Sciences foreign language requirement and satisfies prereq for 400-level literature courses.

271 French Classics in Translation: The Middle Ages and the Renaissance U 3

Reading, analysis and discussion of major works from *The Song of Roland* to those of Renaissance authors such as Rabelais and Montaigne.

Au Qtr. 3 cl. Prereq: Engl 100 or equiv. Does not count toward a French major.

272 French Classics in Translation: From the 17th Century to 1850 U 3

Reading, analysis, and discussion of such authors as Corneille, Racine, Moliere, Voltaire, Rousseau, Diderot, and Balzac.

Wi Qtr. 3 cl. Prereq: Engl 100 or equiv. Does not count toward a French major.

273 French Classics in Translation: The Novel from 1850 to the Present U 3

Reading, analysis, and discussion of such authors as Flaubert, Zola, Proust, Gide, Malraux, Camus, Sartre, Robbe-Grillet, and Duras.

Sp Qtr. 3 cl. Prereq: Engl 100 or equiv. Does not count toward a French major.

293 Individual Studies U 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 cr hrs.

294 Group Studies U 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 cr hrs.

401 Review Grammar and Composition U 3

Review of French grammar; composition on assigned topics and practice in translation.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 105.

402 Intermediate French Conversation and Composition U 3

Vocabulary building, practice in speaking French, conversation, and composition dealing with social and economic aspects of French life.

Au, Sp Qtrs. 3 cl. Prereq: 105.

403 Intermediate French Conversation and Composition U 3

Vocabulary building, practice in speaking French, conversation, and composition dealing with intellectual and artistic aspects of French life.

Su, Wi Qtrs. 3 cl. Prereq: 105.

404 French Pronunciation U 5

Formation of French sounds, rules of pronunciation and diction; lectures and practical exercises; use of phonetic symbols.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 105.

421 Introduction to Modern French Literature U 5

Reading and analysis of representative works of the 19th and 20th centuries; discussion of major movements of modern French literature.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 104.

422 Masterpieces of French Literature: Middle Ages and Renaissance U 5

Au, Sp Qtrs. 5 cl. Prereq: 421.

423 Masterpieces of French Literature: 17th and 18th Centuries U 5

Au, Wi, Sp Qtrs. 5 cl. Prereq: 421.

571 Basic French for Graduate Students G 5

Designed primarily for students who have no formal preparation in French; covers basic grammar and vocabulary.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: Grad standing. Credit does not apply to the minimum number of hours required for the master's or doctoral degrees. No audit.

572 French for Research I G 3

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Grade of C or above in 571, or equiv preparation demonstrated by a placement test. Credit does not apply to the minimum number of hours required for the master's or doctoral degrees. No audit. Repeatable twice. Satisfactory completion of this course (grade of A or B) may be accepted by the student's dept as evidence of a dictionary reading knowledge in fulfillment of PhD language requirement.

573 French for Research II G 3

Su, Wi Qtrs. 3 cl. Prereq: Grade of A or B in 572, or equiv preparation demonstrated by a placement test. Credit does not apply to the minimum number of hours required for the master's or doctoral degrees. No audit. Repeatable twice. Satisfactory completion of this course (grade of A or B) may be accepted by the student's dept as evidence of a dictionary reading knowledge in fulfillment of PhD language requirement.

601 Modern French Syntax U G 5

Systematic review of French grammar with composition and other exercises, based on contemporary authors; modern tendencies in syntactic analysis.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 401.

602 French Translating U G 3

Translation from French to English and English to French.

Su, Au, Sp Qtrs. 3 cl. Prereq: 601 or equiv.

603 Advanced Spoken and Written French U G 3

Intensive practice in speaking and writing French; based on contemporary usage. Carlut.

Su, Wi, Sp Qtrs. 3 cl. Prereq: 402, 403, and 601 or equiv.

604 Advanced French Pronunciation and Phonostylistics U G 3

Training in auditory and oral aspects of French pronunciation; special emphasis on analysis of different types of spoken French.

Su, Wi Qtrs. 2 cl, 1 lab hr. Prereq: 404 or permission of instructor.

621 French Literature of the Renaissance U G 5

Selections from Marot, Rabelais, the Pleiade and Montaigne as they reflect the age of humanism and illustrate the transition from medieval to modern forms and ideas. Cottrell.

Au Qtr. 5 cl. Prereq: 421 and either 422 or 423.

622 French Classicism, 1600-1715 U G 5

The formation of the classic spirit; the perfection of dramatic form and the 17th century portrait of man. Williams.

Sp Qtr. 5 cl. Prereq: 421 and either 422 or 423.

623 French Literature of the Enlightenment U G 5

A study of the ideas of the eighteenth century in their relation to modern times; special emphasis on Montesquieu, Voltaire, Diderot, and Rousseau. Rosbottom.

Au Qtr. 5 cl. Prereq: 421 and either 422 or 423.

624+* The Romantic Period in French Literature, 1800-1850 U G 5

The development of romanticism and rise of realism in the first half of the 19th century in the novel, poetry, and drama. Carlut.

Wi Qtr. 5 cl. Prereq: 421 and either 422 or 423.

625 French Literary Currents, 1850-1914 U G 5

Realism, naturalism, symbolism, and the movements of reaction in the novel and in literary criticism. Carlut.

Wi Qtr. 5 cl. Prereq: 421 and either 422 or 423.

626 Contemporary French Literature U G 5

20th century literary currents, and their significance, with special attention given to the novel; Proust, Gide, Malraux, Mauriac, Bernanos, Saint-Exupery, Camus, Sartre, and others. Rewar and Astier.

Sp Qtr. 5 cl. Prereq: 421 and either 422 or 423.

627 Contemporary French Drama U G 3

Plays of Lenormand, Rostand, Claudel, Giraudoux, Cocteau, Montherlant, Anouilh, Sartre, Camus, and Ionesco; the different theatres and directors from Copeau to the present day. Astier.

Su, Wi Qtrs. 3 cl. Prereq: 421 and either 422 or 423.

628 Modern French Poetry U G 5

Source and processes of poetic creation as exemplified in selected works of French poets from Baudelaire to the present time. Mitchell.

Sp Qtr. 5 cl. Prereq: 421 and either 422 or 423.

629 Explication de textes U G 3

Intensive linguistic and literary exploration of representative passages from modern French authors.

Au, Sp Qtrs. 3 cl. Prereq: 421 and either 422 or 423. Repeatable to a maximum of 6 cr hrs.

631+* French Literature U G 2-5

Su Qtr. 3 cl. Prereq: 421 and either 422 or 423.

Repeatable to a maximum of 15 cr hrs.

640 Les origines de la civilisation française U G 5

Major developments of French culture and civilization from its beginning to 1900.

Wi Qtr. 5 cl. Prereq: 401 and 402 or 403. Conducted in French.

- 641 La civilisation française contemporaine U G 3**
Life, institutions, and culture of contemporary France. Carlut.
Au Qtr. 3 cl. Prereq: 401 and 402 or 403. Conducted in French.
- 693 Individual Studies U G 1-15**
Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.
- 694 Group Studies U G 1-15**
Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.
- 702* Advanced Translation and Comparative Stylistics U G 3**
A comparative study, through intensive translation, of the stylistic resources of French and English. Astier.
Wi Qtr. 3 cl. Prereq: 602 or permission of instructor.
- H783 Honors Course U 3-5**
Offers undergraduates with special aptitudes a greater opportunity to do independent study than is possible in the ordinary course; work in conference, library, or phonetics laboratory.
Su, Au, Wi, Sp Qtrs. Prereq: 4th yr. standing with a grade of A in at least half of the French courses and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Repeatable to a maximum of 15 cr hrs.
- 811 The French Language: Introduction G 3**
A brief external history of the language along with an introduction to linguistic concepts based on modern French materials.
Au Qtr. 3 cl. Prereq: MA candidates in French; others by permission of instructor.
- 815* History of the Provençal Language G 5**
The major factors of change in the evolution of the Provençal language from Roman times to the present. Keller.
Au Qtr. 5 cl. Prereq: 811 and a knowledge of Latin or permission of instructor.
- 816 Modern French and Its Historical Background G 3**
Examination of recent developments, pronunciation, word-formation, and sentence structure. Keller.
Au Qtr. 3 cl. Prereq: 811 or permission of instructor.
- 817 Old French and Its Historical Background G 3**
Using materials from the 12th and 13th centuries, the structure of Old French will be described from the point of view of phonology, morphology, and syntax.
Wi Qtr. 3 cl. Prereq: 816.
- 818 French Language in the Renaissance and Classical Periods G 3**
A study of modern French from the formative period in the late Middle Ages in its subsequent development up to 1827. Keller.
Sp Qtr. 3 cl. Prereq: 817.
- 819 Historical Grammar of French G 3**
A diachronic study of the internal development of French from the Vulgar Latin to the modern period.
Sp Qtr. 3 cl. Prereq: 817 and permission of instructor.
- 821 Medieval French Literature G 3**
An introduction to the major genres of medieval French literature.
Au Qtr. 3 cl.
- 822 Topics and Problems in Medieval French Literature G 3**
A thorough study of one or more of the major genres of medieval French literature.
Sp Qtr. 3 cl. Prereq: 821. Repeatable to a maximum of 9 cr hrs.
- 823* Topics and Problems in 16th Century French Literature G 3**
Intensive exploration of a special topic or problem, with readings in literary works and in relevant criticism and scholarship. Cottrell.
Sp Qtr. 3 cl. Prereq: 621 or permission of instructor. Repeatable to a maximum of 9 cr hrs.
- 824 Topics and Problems in 17th Century French Literature G 3**
Intensive exploration of a special topic or problem, with readings in literary works and in relevant criticism and scholarship. Williams.
Au Qtr. 3 cl. Prereq: 622 or permission of instructor. Repeatable to a maximum of 9 cr hrs.
- 825* Topics and Problems in 18th Century French Literature G 3**
Intensive exploration of a special topic or problem, with readings in literary works and in relevant criticism and scholarship. Rosbottom.
Au Qtr. 3 cl. Prereq: 623 or permission of instructor. Repeatable to a maximum of 9 cr hrs.
- 826 Topics and Problems in 19th Century French Literature G 3**
Intensive exploration of special topics or problems with readings in literary works in relevant criticism and scholarship. Carlut.
Sp Qtr. 3 cl. Prereq: 624, 625, or permission of instructor. Repeatable to a maximum of 9 cr hrs.
- 827 Topics and Problems in 20th Century French Literature G 3**
Intensive study of a specific topic or problem with readings of selected literary and critical works. Astier.
Wi Qtr. 3 cl. Prereq: 626 or equiv. Repeatable to a maximum of 9 cr hrs.
- 828 Old Provençal G 5**
Origin of the troubadour lyric; its history, as to form and content, in the 11th and 12th centuries; elements of phonology and morphology.
Au Qtr. 5 cl. Prereq: 813 or Spanish 813.
- 829* Old Provençal G 5**
Troubadour lyric in the 13th century; increased attention to non-lyric genres, and to prose; continuation of linguistics, with greater emphasis on semantic problems.
Sp Qtr. 5 cl. Prereq: 828.
- 831 Seminar in French Literature G 2-5**
Su (2-3 cr hrs), Au, Sp (3-5 cr hrs) Qtrs. Prereq: Permission of instructor.
- 832 Seminar in French Literature G 2-5**
Su (2-3 cr hrs), Wi, Sp (3-5 cr hrs) Qtrs. Prereq: Permission of instructor.
- 833 Seminar in French Literature G 3-5**
Wi Qtr. Prereq: Permission of instructor.

842†* Topics and Problems in Provençal Literature from the 16th to the 20th Century G 5

Intensive exploration of a special topic or problem, with readings in literary works from selected periods of Provençal literature.

Sp Qtr. 5 cl. Prereq: 821 or 822 or permission of instructor. Repeatable to a maximum of 10 cr hrs.

843 Major Authors of the 16th Century G 3

Intensive exploration of representative works of one or more major authors of the century. Cottrell.

Sp Qtr. 3 cl. Prereq: 621 or written permission of instructor. Repeatable to a maximum of 9 cr hrs.

844 Major Authors of the 17th Century G 3

Intensive exploration of representative works of one or more major authors of the century. Williams.

Wi Qtr. 3 cl. Prereq: 622 or written permission of instructor. Repeatable to a maximum of 9 cr hrs.

845 Major Authors of the 18th Century G 3

Intensive exploration of representative works of one or more major authors of the century. Rosbottom.

Au Qtr. 3 cl. Prereq: 623 or equiv with written permission of instructor. Repeatable to a maximum of 9 cr hrs.

846 Major Authors of the 19th Century G 3

Intensive exploration of representative works of one or more major authors of the century. Carlut.

Wi Qtr. 3 cl. Prereq: 624 or 625 or equiv with written permission of instructor. Repeatable to a maximum of 9 cr hrs.

847 Major Authors of the 20th Century G 3

Intensive exploration of representative works of one or more major authors of the century. Astier.

Au Qtr. 3 cl. Prereq: 626, 627 or 628 or equiv with written permission of instructor. Repeatable to a maximum of 9 cr hrs.

885 Introduction to Methods in the History and Criticism of Literature G 5

Selected readings in basic literary history, criticism, and theory, with practice in the use of standard bibliographical aids to scholarship. Williams.

Wi Qtr. 4 or 5 cl.

886* Bibliography and Method G 3

A course to acquaint graduate students with tools, problems, and methods of linguistic and literary research.

Sp Qtr. 3 cl.

Medieval and Renaissance Culture

See Medvl and Renais S 888.

Medieval and Renaissance Literature

See Medvl and Renais S 889.

893 Individual Studies G 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

894 Group Studies G 1-15

Investigation of minor problems in the various fields of French literature and language.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 30 cr hrs.

999 Research in French Language or Literature G Arr

Research for thesis and dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Genetics

Office: 105 Botany and Zoology Building, 1735 Neil Avenue, 422-8084

✓140 Introduction to Genetics U 5

An introductory course emphasizing applied aspects of genetics, primarily for students outside the College of Biological Sciences. Essman.

Au, Wi, Sp. Qtrs. 5 cl. Prereq: Biology 100 or Botany 110 or Zoology 110. Not open to students with credit for 314.

294 Group Studies U 2-5

Group work in the field of the chosen program.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

✓500 General Genetics U G 5

The principles of genetics, including molecular genetics, transmission genetics of prokaryotes and eukaryotes, developmental and non-chromosomal genetics, and the genetics and evolution of populations. Birky, House and Scholl.

Au, Wi, Sp. Qtrs. 5 cl. Prereq: Biology 100 or Botany 110 or Zoology 110 plus 5 additional cr hrs in biological sciences and Math 150 or equiv with written permission of instructor. Not open to students with credit for 314, 630 or Biology 314 or 630.

600 Genetics Laboratory U G 3

A laboratory approach to fundamental genetics; concepts and techniques involved in collection and analysis of data from exercises utilizing *Drosophila*, *Mormoniella*, *Sordaria*, and *Neurospora*. Essman.

Au, Sp Qtrs. 32-hr labs. Prereq: 500 and permission of instructor.

History of Biology

See Botany 601.

611 Molecular Genetics U G 5

Molecular mechanisms of DNA replication, mutation, recombination, and repair; analysis of gene structure; metabolic and genetic control mechanisms; prokaryotic and eucaryotic systems are analyzed. Marzluf and Perlman.

Sp Qtr. 5 cl. Prereq: One course in biochem and background in one or more of the following areas: genetics, micrbiol, dev biol; or permission of instructor. Not open to students with credit for Biochem 611. Cross-listed in Biochem.

631 The Cytological Basis of Genetics U G 5

Documentation of the correlation between genetic principles and chromosome behavior by studying the mitotic and meiotic cells of several organisms with oil immersion microscopy. Paddock.

Wi Qtr. 2 cl, 32-hr labs. Prereq: 500 or equiv. Not open to students with credit for Biology 631.

632 Plant Genetics U G 5

Effects of lethals, linkage, heterogone, introgression, polyploidy, and cytoplasm; laboratory experience with smears, progeny tests, random number tables, and herbarium specimens. Paddock.

Au Qtr. 3 cl, 22-hr labs. Prereq: 500, Botany 102 or 112 or 500, and 10 additional cr hrs in biological sciences. Not open to students with credit for Botany 650.

640 The Genetic Basis of Evolution U G 5

The modern theory of evolution and its underlying genetic basis. Scholl.

Au Qtr. 5 cl. Prereq: 500.

650 Analysis and Interpretation of Biological Data I U G 5

Methods of analyzing biological data including: sampling, descriptive statistics, distributions, group comparisons, statistical inference, one-way and nested analysis of variance and linear regression and correlation. Skavariil.

Au, Sp Qtrs. 1 2-hr lab, 4 cl. (optional after first week), 3-5 hrs computer assisted instruction. Prereq: Math 150 or equiv and 15 cr hrs of courses at the 300 level or higher in a dept of the College of Agr and Home Ec or in the College of Biol Sciences. Not open to students with credit for Biology 650.

651 Analysis and Interpretation of Biological Data II U G 5

Methods used in analyzing data classified in two or more ways: Latin-square, split-plot and factorial designs, analysis of covariance, data transformations, multiple regression and least-squares. Harvey and Weaver.

Su, Wi Qtrs. 5 cl. Given in Su Qtr at Wooster only. Prereq: 650 or Biology 650. Not open to students with credit for Biology 651.

660†* Computer Applications in Genetics U G 5

Simulation techniques and applications of modern computer methodology to problems in genetics. Skavariil.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: 500, 650, CIS 211 or completion of the computer assisted instruction course "forbus" or equiv with written permission of the instructor.

693 Individual Studies U 2-5 G 2-10

Individual work in the field of the chosen problems.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs for undergrad credit and to a maximum of 35 cr hrs for grad credit.

- a—Cytogenetics and Cellular Genetics. Birky, Essman, Fechheimer, Paddock, and Perlman.
- b—Physiological and Developmental Genetics. House
- c—Mathematical and Population Genetics. Allaire, Griffing, Harvey, Jaap, Kriebel, Skavariil, Swiger, Young, and Scholl.
- d—Behavior Genetics. Rothenbuhler.

694 Group Studies U 2-5 G 2-10

Group work in the field of the chosen program. See areas in 693.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs for undergrad credit and to a maximum of 35 cr hrs for grad credit.

720† Genetics and Biogenesis of Cell Organelles U G 5

Basic concepts and current literature on the biogenesis of prokaryotic and eukaryotic organelles and the role of nonchromosomal information in organellar, cellular, and organismal heredity. Birky and Perlman.

Wi Qtr. 5 cl. Prereq: Background in genetics, cell biol, and biochem, or permission of instructor.

Genetics of Animal Populations

See Animl Sc 720, Dairy Sc 720, and Pltry Sc 720.

730†* Cytogenetics U G 3 or 5

Origin, transmissibility, and effects of chromosomal aberrations; their usefulness in practical breeding and in attacks on fundamental cytogenetic problems. Paddock.

Sp Qtr. 3 cl, 22-hr labs. Prereq: 500 and 631 or Biology 630 and 631. Not open to students with credit for Biology 730.

740* Introduction to Human Statistical Genetics U G 3

An introduction to statistical techniques used in the study of human genetics.

Sp Qtr. 3 cl. Prereq: 500 and 650, Math 503, or equivs.

H783 Honors Course U 3-5

A program of reading and research for each student with individual conferences, reports, and Honors thesis.

Su, Au, Wi Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the courses in biological sciences and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degree BA or BS with *distinction* in genetics. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs.

800 Genetic Seminar G 1-3

Faculty, graduate students, and outside speakers will participate. Fechheimer and Perlman.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

811 Advanced Topics in Molecular Genetics G 3

An examination of the current research in molecular genetics by selective reading assignments and critical analysis during class discussion periods. Marzluf, Perlman and Johnson.

Au Qtr. 3 hrs. arr. Prereq: 611 or Biochem 611. Repeatable to a maximum of 6 cr hrs. Not open to students with credit for Biochem 811. Cross-listed in Biochem.

Current Topics in Animal Genetics

See Animl Sc 820, Dairy Sc 820, and Pltry Sc 820.

831* The Nature of Gene Action G 5

A study of the action of genes at all levels of expression with special emphasis on the role of genes in developmental processes. House.

Sp Qtr. 5 cl. Prereq: Background in genetics and in one or more of the following areas: embryology, physiology, biochemistry, cell biology; or written permission of instructor. Not open to students with credit for Biology 831.

832 Mathematical Genetics G 5

The construction of mathematical models, use of path coefficients, generation matrices, least-squares and maximum likelihood methods for estimating genetic parameters and breeding values in quantitative genetics. Harvey.

Sp Qtr. 5 cl. Prereq: 30 cr hrs in genetics, math, and stat. Not open to students with credit for Biology 832.

840†* Transmission Genetics Theory G 3

The mathematical basis of transmission genetics to include any level of polysomic inheritance. Griffing.

Wi Qtr. 3 cl. Prereq: 500 or equiv; Stat 520 and 521, or equiv, and permission of instructor.

841†* Quantitative Genetics and Selection Theory G 3

The genetical basis for complexly inherited, quantitative, biological variables and the theory of truncation selection as it pertains to such variables. Griffing.

Au Qtr. 3 cl. Prereq: 500 or equiv; Stat 520 and 521, or equiv, and permission of instructor.

Behavior Genetics

See Zoology 840.

850 Theoretical and Experimental Population Genetics G 5

Discussion of mathematical theories in population genetics and experimental works on natural and laboratory populations. Young.

Wi Qtr. 5 cl. Prereq: 12 cr hrs of college level math; 5 cr hrs of applied or mathematical statistics; 1 course in general genetics.

890 Interdepartmental Seminar in Developmental Biology G 2

Students will present oral reports and lead discussion on research progress in specific areas of developmental biology.

Au Wi, Sp Qtrs. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs. Given cooperatively by Botany, Genetics, Microbiology, and Zoology.

999 Research in Genetics G Arr

Research for thesis and dissertation purposes only. Su, Au, Wi, Sp Qtrs.

Geodetic Science

Office: 440 Cockins Hall, 1958 Neil Avenue, 422-6753

202 Introduction to Surveying U 4

An introduction to surveying theory, practice and professionalism.

Au, Wi Qtrs. 3 cl, 1 3-hr lab. Prereq: Physics 131. Not open to students with credit for 512 or Civil En 202. Cross-listed in Civil En.

294 Group Studies U 2-5

Designed to give groups of students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

301 Survey Measurements and Computations U 5

Significant figures; errors and mistakes; theoretical analysis and propagation of errors in measurements; specification derivation; plane surveying computations including angles, directions, coordinates, areas, applications.

Wi Qtr. 4 cl, 1 3-hr lab. Prereq: 202 or Civil En 202. Not open to students with credit for Civil En 301 or 404. Cross-listed in Civil En.

302 Field Surveying Principles U 4

Field data acquisition; planning and execution of field surveys; elevation, angle and distance measurements; survey instrument construction and use; topographic and other site detail surveys.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 301 or Civil En 301. Not open to students with credit for Civil En 302. Cross-listed in Civil En.

303 Surveying History U 3

Development of surveying and mapping methods, equipment, land ownership and land survey systems with emphasis on systems in the United States, particularly Ohio.

Au Qtr. 3 cl. Prereq or concur: 202 or Civil En 202. Not open to students with credit for Civil En 303. Cross-listed in Civil En.

407 Engineering and Construction Surveys U 5

Route and utility location and surveying; construction surveys for various structures and engineering projects; earthwork computations; hydrographic surveys; mine and tunnel surveys; industrial surveys. Sp Qtr. 4 cl, 1 3-hr lab. Prereq: 202 or Civil En 202. Not open to students with credit for Civil En 407 or 504. Cross-listed in Civil En.

408 Boundary Relocation Principles U 5

Legal principles for establishment of property lines; acquisition and evaluation of survey evidence of property lines; Ohio State survey laws; conduct of property resurveys.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: 302 or Civil En 302 and 303 or Civil En 303. Not open to students with credit for Civil En 408. Cross-listed in Civil En.

409 Preserving Survey Evidence U 4

Preparation of written and graphical property descriptions, including statements concerning measurements; astronomical observations for accurate direction; survey monumentation standards; recording procedures; state plane coordinate systems.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 408 or Civil En 408. Not open to students with credit for Civil En 409. Cross-listed in Civil En.

General Prerequisites for all 500-Level Courses

Prerequisite for all 500-level courses is Math 151.

505 Photogrammetry and Photo Interpretation U G 4

Principles and applications of photogrammetry and photo interpretation.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: Physics 131 or equiv with written permission of instructor. Not open to students with credit for 525 or Civil En 402, 505. Cross-listed in Civil En.

507 Surveying and Platting of Development Plans U G 4

Surveying of public and private physical site development plans; land use controls and other factors influencing land subdivisions; surveying and platting of typical development plans.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 301 or Civil En 301. Not open to students with credit for Civil En 507 or 602. Cross-listed in Civil En.

508 Fundamentals of Geodetic Surveying U G 5

Principles of establishment and extension of major control; principles of construction and use of angular, distance, elevation difference, and gravity measuring devices.

Au Qtr. 4 cl, 1 3-hr lab. Prereq: 202 or Civil En 202. Not open to students with credit for 515 or Civil En 508. Cross-listed in Civil En.

535 Cartography I U G 4

An introduction to basic considerations in cartography with an emphasis on topographic mapping.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: Permission of instructor.

General Prerequisites for all 600-Level Courses

Prerequisites for all 600-level courses include Math 254 and Physics 131.

603 Remote Sensing U G 4

The energies of the natural and cultural environment, current remote sensing systems, and case histories of applications in measuring the environment.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 505 or Civil En 505 or equiv with written permission of instructor. Not open to students with credit for Civil En 603. Cross-listed in Civil En.

604 Terrain Analysis U G 4

Principles and applications of photo pattern analysis, geologic and geomorphologic patterns, terrain studies, and land use suitability and capability mapping.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 505 or Civil En 505, and Geol 101. Not open to students with credit for 625 or Civil En 604 or 701. Cross-listed in Civil En.

613 Introduction to Advanced Geodesy U G 5

Determination of geodetic reference surfaces by geometric, gravimetric, and celestial methods; establishing horizontal and vertical and three dimensional control.

Sp Qtr. 5 cl. Prereq: 508, 646, and 650; or equiv. Not open for grad credit to students registering for 658, 776 or 777.

624 Instrumentation in Photogrammetry U G 4

Introduction to instruments used in photogrammetry; single, double, and multi-image types; stereoplotter, comparators, and analytical plotters; evaluation testing, and adjustment of instruments.

Wi Qtr. 2 cl, 2 3-hr labs. Prereq: 505 or equiv.

626 Metric Photography U G 4

Properties, design and calibration of various photogrammetric cameras; physical characteristics and quality control of photography; photogrammetric airplanes and auxiliary devices; image evaluation.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 505 or equiv.

627 Introduction to Advanced Photogrammetry U G 5

Coordinate transformation in photogrammetry and their differential forms; space resection and orientation, intersection, critical geometry; photogrammetric mapping; photogrammetric surveying; spatial triangulation.

Sp Qtr. 4 cl, 1 3-hr lab. Prereq: 505 and 651; or equiv. Not open for grad credit for students registering for 660, 778, 779.

635 Cartography II U G 4

Advanced considerations in basic cartography with particular reference to integrated mapping at national and international levels and the special problems of air and sea charting.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 535 or equiv.

636 Mathematical Cartography U G 4

Common coordinate and reference systems; the principal map projections of the sphere; their properties and usage; introduction to cartometry.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 645, or equiv with written permission of instructor.

637 Introduction to Advanced Cartography U G 5

A survey of cartographic fundamentals in the context of contemporary developments.

Au Qtr. 4 cl, 1 3-hr lab. Prereq: 535 or equiv with written permission of instructor. Not open for grad credit to students with credit for 635 or 735.

645 Applied Mathematical Methods in Geodetic Science I U G 3

Mathematical techniques used in geodetic science; Taylor series; vector analysis; matrix computations; elements of differential geometry.

Au Qtr. 3 cl.

646 Applied Mathematical Methods in Geodetic Science II U G 3

Continuation of 645; complex variables, analytic functions; and conformal mapping; use of divided differences; spherical harmonics.

Wi Qtr. 3 cl. Prereq: 645 or equiv.

650 Adjustment Computations I U G 3

Classification of errors, measures of dispersion, variance, covariance, propagation of errors, weights, observation, condition and normal equations, examples.

Au Qtr. 2 cl, 1 3-hr lab. Prereq or concur: 645 or equiv.

651 Adjustment Computations II U G 4

A posteriori variances, representation of residuals, combination of observation and condition equations, generalized minimum variance solution for hybrid measuring systems, statistical tests, empirical fitting of polynomials.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 650 or equiv.

658 Geometric Geodesy U G 4

Historical development; geometry of the reference ellipsoid; reductions and use of ellipsoid as a reference surface; organization of major geodetic control; introduction to advanced geometric geodesy problems.

Wi Qtr. 4 cl. Prereq: 650 or equiv.

660 Geometric Photogrammetry U G 3

Interior, exterior orientation; space resection and intersection; coordinate transformations, affine, isogonal, (Helmert), projective (collinearity), direction cosines, gimbal, and their differential forms, critical geometry.

Wi Qtr. 2 cl, 1 3-hr lab. Prereq: 505 and 645; or equiv.

664 Geodetic Astronomy U G 3

Stellar coordinate systems; stellar positions and motions; time; star catalogues; principles of position determination.

Wi Qtr. 3 cl. Prereq: 645 or equiv.

665 Observational Geodetic Astronomy U G 2

Instrumentation; timekeeping and dissemination; determination of astronomic latitude, longitude, and azimuth.

Sp Qtr. 1 cl, 1 3-hr lab. Prereq: 650 and 664; or equiv.

686 Field Work in Geodesy U G 5

Su (1st term) Qtr. 1 cl, 5 4-hr labs. Prereq: 508.

687 Field Work in Geodetic Astronomy U G 5

Su (2nd term) Qtr. 1 cl, 5 4-hr labs. Prereq: 664.

688 Field Work in Photogrammetry U G 5

Su (2nd term) Qtr. 4 cl, 5 4-hr labs. Prereq: 202 and 505.

693 Individual Studies U G 2-9

Assigned reading laboratory or field work, under the guidance of a staff member, arranged to meet the requirements of individual students.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

694 Group Studies U G 2-9

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

735 Applied Cartography U G 4

Compilation, design, and reproduction in cartography with an emphasis on rationalization of operations and practical work.

Au Qtr. 2 cl, 1 3-hr lab. Prereq: 535 or 635 or equiv.

760 Advanced Geometric Geodesy U G 4

Solution of long line problems on the ellipsoid; datum transformations; determination of the size and shape of the reference ellipsoid; fundamentals of three-dimensional geodesy.

Au Qtr. 4 cl. Prereq: 658 or equiv.

761 Mathematical Projections in Geodesy U G 5

Use of analytic functions; representation of the ellipsoid on a sphere; geometry of the projected geodesic; Mercator, Transverse Mercator, Oblique Mercator, Conformal Conic projections.

Sp Qtr. 4 cl, 1 3-hr lab. Prereq: 636 or equiv.

762 Advanced Adjustment Computations U G 4

Analyses of mathematical models; systematic errors, correlations, inner adjustment, multivariate statistical analysis; generalized matrices in adjustment.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 651 or equiv.

763* Navigation U G 3

Sea, air, and space navigation, analysis of instruments, environmental factors, and geometric aspects.

Sp Qtr. 3 cl. Prereq: 664 or equiv.

776 Gravimetric Geodesy U G 4

The gravity and its potential; the disturbing potential and its representation; applications and current methods.

Sp Qtr. 4 cl. Prereq: 646, 651, and 658; or equiv.

777 Satellite Geodesy U G 3

Geometric and dynamic applications of artificial satellites in geodesy; determination of station positions and the gravity field of the earth.

Au Qtr. 3 cl. Prereq: 651, 658, and 664; or equiv.

778 Analog Photogrammetry U G 5

Geometric concepts in models, strips, and blocks, without and with auxiliary information; use of analog photogrammetry in large, medium, and small scale mapping.

Sp Qtr. 4 cl, 1 3-hr lab. Prereq: 650 and 660; or equiv.

779 Computational Photogrammetry U G 4

Correction for refraction, distortion; procedures in resection, orientation, intersection; observations on exterior orientation, on survey coordinates; numerical spatial triangulations; system calibration; error estimates; engineering applications.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 651 and 660; or equiv.

780 Non-Conventional Photogrammetry U G 4

Studies in strip, panoramic, and weather satellite photography systems; Ranger, Surveyor, and Lunar Orbiter and Mariner systems; electron microscopy and hologrammetry.

Au Qtr. 4 cl. Prereq: Written permission of instructor.

781* Advanced Geodetic Astronomy U G 3

Star catalogues and their relationships; time and latitude determinations in observatories; coordinated timekeeping and dissemination; eclipses and occultations; modern astronomical techniques.

Sp Qtr. 3 cl. Prereq: 664 and 665 and written permission of instructor.

782* Geodetic Applications of Digital Computers U G 4

Advanced programming techniques; computer developments and use in geodesy, photogrammetry, and cartography.

Au Qtr. 4 cl. Prereq: Written permission of instructor.

802 Advanced Computational Photogrammetry G 4

Weight constraints, method of independent bases; functional constraints, surface geometry enforcement; dynamic aerial calibration; close range calibration, application; Reseau photography and specialized comparator techniques.

Wi Qtr. 3 cl, 1 3-hr. lab. Prereq: 778 and 779; or equiv.

805* Advanced Stereophotogrammetry G 4

Differential formulas, parallax formulas; relative and absolute orientation; model errors; quality control in model orientations; critical surface; convergent photography.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 778 and 779; or equiv.

822 Photogrammetry in Practice G 4

Planning for aerial, terrestrial, and close-range photogrammetry jobs; ground control and signalization; map compilation, efficiency assessment; economic considerations; technical writing; various applications of photogrammetry.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 778 and 779; or equiv.

826* Photo-Triangulation G 4

Spatial photo-triangulation; analogical and analytical, strip and block triangulations; error propagation; use of auxiliary data; independent geodetic control; partial control extension; accuracy and economy considerations.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 778 and 779; or equiv.

835* Advanced Cartography G 4

A review of current research, development, and thinking in cartography with particular attention to automation, photomapping, and orbital cartography.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 635 and 636.

871* Advanced Gravimetric Geodesy G 4

Boundary-value problem; use of spherical harmonics; statistical application; appropriate representations; computations in space; combination of gravimetric and satellite data; interpretation of the gravity field.

Au Qtr. 4 cl. Prereq: 776 and 777; or equiv.

872* Selenodesy and Lunar Mapping G 3

Dynamics of the earth-moon system; instrumentation in selenodesy; analysis of the gravity field of the moon; position determination of the moon, lunar mapping.

Wi Qtr. 3 cl. Prereq: 777 or equiv.

873* Advanced Satellite Geodesy G 4

Dynamics of earth orbiting satellites; equations of motion and their solutions; advanced data acquisition method; analysis for the gravity field and station positions.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 777 or equiv.

874* Map Projection Analysis G 3

Discussion of geodetic and non-geodetic map projections with emphasis on projection characteristics; mathematics of choosing a suitable map projection.

Au Qtr. 3 cl. Prereq: 761 or equiv.

885 Research Principles and Techniques G 2-9

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

887 Seminar G 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

894 Group Studies G 2-9

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 30 cr hrs.

899 Interdepartmental Seminar G 1-5

Topics to be announced each quarter offered. Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

998 Research in Geodetic Science: Thesis G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

999 Research in Geodetic Science: Dissertation G Arr

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Geography

Office: 156 Hagerty Hall, 1775 College Road, 422-2514

200 World Regional Geography U 5

A comparative study of representative regions of the world; an examination of the cultural, social, economic, and political developments in relation to the geographical conditions.

Su, Au, Wi, Sp Qtrs. 5 cl.

220 Introduction to Physical Geography U 5

The elements and processes of the natural environment, their characteristics, distribution, and implications in the human habitat.

Su, Au, Wi, Sp Qtrs. 5 cl. H220 (honors) may be available to students enrolled in an honors program; others with permission of dept.

240 Economic and Social Geography U 5

Introduction to geography as a social science; location theory, urban growth processes, spatial diffusion, and behavioral models; their applications to selected regional and urban problems.

Su, Au, Wi, Sp Qtrs. 5 cl. H240 (honors) may be available to students enrolled in an honors program; others with permission of dept.

294 Group Studies U 3-5

Students are given the opportunity to pursue special studies not otherwise offered.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs.

400 Geography of United States and Canada U 3

A geographical analysis of the United States and Canada; the correlation of their natural resources and other environmental factors with their economic and cultural development.

Sp Qtr. 3 cl. Prereq: Either 200, 220, 240 or equiv.

401 Geography of Ohio U 3

An appraisal of geographic factors in the development of Ohio's natural resources, agriculture, manufacturing, and commerce; historical development of the major economic factors.

Sp Qtr. 3 cl. Prereq: Either 200, 220, 240, or equiv.

505 Geography of Latin America U G 4

Geographic analysis of Middle and South America emphasizing the interrelationships of the resource base, cultural characteristics, and outside influences upon economic development.

Au, Wi Qtrs. 3 cl. Prereq: Either 200, 220, 240, or equiv, or permission of instructor. Not open to students with credit for 405.

505.01 Middle America

Au Qtr.

Not open to students with credit for 405.01.

505.02 South America

Wi Qtr. Not open to students with credit for 405.02.

508 Geography of Africa U G 4

The African environment and the development of culture and economic life; impact of alien culture in Africa; Islamic and western influences in creating geographic regions.

Wi Qtr. 3 cl. Prereq: Either 200, 220, 240, or equiv, or permission of instructor. Not open to students with credit for 408.

510 Geography of Western Europe U G 4

Geographic factors in the economic, social, and political progress of the nations of Western Europe; major problems of the area in the light of their geographic background.

Sp Qtr. 3 cl. Prereq: Either 200, 220, 240, or equiv, or permission of instructor. Not open to students with credit for 410.

511 Geography of Eastern Europe U G 4

Resources, their assessment, and development, and related problems in Eastern Europe; the geographic significance of each state to the Communist bloc and to the West.

Wi Qtr. 3 cl. Prereq: Either 200, 220, 240 or equiv, or permission of instructor. Not open to students with credit for 411.

512 Geography of the Soviet Union U G 4

The major regional divisions of the Soviet Union; the resource base in relation to the economic and political aims of the Soviet State.

Au Qtr. 3 cl. Prereq: Either 200, 220, 240 or equiv, or permission of instructor. Not open to students with credit for 412.

515 Geography of the Middle East U G 4

The Middle East and its natural regions in relation to local and international problems; physical and cultural patterns in relation to the current economies.

Sp Qtr. 3 cl. Prereq: Either 200, 220, 240, or equiv., or permission of instructor. Not open to students with credit for 415.

520 Climatology U G 5

The elements and the controls of climate; types of climate and their distribution; climates and their effects on the economic and other activities of man.

Au, Wi Qtrs. 5 cl.

530 Conservation of Natural Resources U G 4

Philosophy of resource use; appraisal of resource base; costs of resource development and conservation; resource perception, utilization and alternatives.

Au, Wi Qtrs. 3 cl.

560 Political Geography U G 4

Examination of contemporary problems in the political geography of public cost and benefit at international, interregional and urban scales.

Au Qtr. 3 cl. Prereq: Permission of instructor.

580 Elements of Cartography U G 5

A study of the cartographic techniques of map compilation and presentation including generalization, symbolization, reproduction, and simple computer mapping.

Au Qtr. 2 cl, 2 2-hr labs.

605† Special Problems in the Geography of Latin America U G 5

The analysis of selected topical problems in Latin American geography; typical problem areas are urbanization, industrialization, transportation, agricultural development, and regional development.

Sp Qtr. 3 cl. Prereq: 505 or permission of instructor. Repeatable to a maximum of 10 cr hrs.

612 Special Problems in the Geography of the U.S.S.R. U G 5

Spatial analysis of selected topical problems in Soviet geography.

Sp Qtr. 4 cl. Prereq: 512 or permission of instructor. Repeatable to a maximum of 10 cr hrs.

622 Microclimatology U G 5**622.01 Microclimatology and Radiation Climatology Theory**

Theory of exchanges of energy and mass at the earth-atmosphere interface as it relates to microclimates with particular emphasis upon radiation and climate.

Wi Qtr. 5 cl. Prereq: 520 or permission of instructor. Not open to students with cr for 620.

622.02* Microclimatological Measurements

Practical experience in the fabrication of instruments, deployment of measurement systems in the field and recording of data related to microclimates.

Sp Qtr. 3 cl. 3-hr lab. Prereq: 622.01.

623* Applied Climatology: Synoptic Analysis and Forecasting U G 5

Theory and practice in synoptic weather analysis and forecasting.

Wi Qtr. 5 cl. Prereq: 520 or Physics 503.

640 Location of Manufacturing U G 5

The changing character and concentration of industrial districts; representative industries in relation to labor supply, sources of raw material and power, transportation, and markets.

Au Qtr. 3 cl. Prereq: Permission of instructor.

642 Geography of Development U G 5

Spatial aspects of economic development; spatial analysis of traditional economics, industrial regions, transport linkages and migration patterns in developing countries.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

645 Geography of Transportation U G 5

Relation between transportation and spatial organization; selected analytical models dealing with traffic demand, network configuration and allocation of transport facilities; application to selected problems.

Wi Qtr. 4 cl. Not open to students with credit for 545.

647 Locational Analysis U G 5

Historical review of major location theories and evaluation of application of such theories to geographic problems.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

650 Urban Geography U G 5

Origin and growth of cities; structure and function of urban centers, their areal expansion, and intertrade center relations, each examined in relation to city planning.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Permission of instructor.

660 Intermediate Political Geography U G 5

Examination of models of spatial organization of political systems and of spatial allocation of social cost and benefit.

Wi Qtr. 3 cl. Prereq: 560 or equiv and permission of instructor.

670 Population Geography U G 5

Analysis of population distributions, locational arrangements of growth, densities, and migration flows; spatial relationships between population variables and social, economic, and environmental factors.

Wi Qtr. 3 cl. Prereq: 240.

Natural Resources Problems, Programs, and Policies

See Agr Econ 680.

681† Cartography U G 5

The inception, conceptualization, execution, and presentation of thematic statistical maps are studied; emphasis on cartographic design.

Wi Qtr. 2 cl, 2 2-hr labs. Prereq: 580 or permission of instructor.

682 Individual Studies in Cartography U G 3-5

Individual study of cartographic subjects; map compilation, cartographic classification, regionalization, and multi-dimensional representation, computer mapping and real-time computer cartographics.

Au, Wi, Sp Qtrs. Conf and lab. Prereq: Permission of instructor.

683 Computer Cartographics U G 5

A study of computer-assisted map compilation and execution; emphasis is placed upon the integration of computer graphic and cartographic skills and techniques.

Sp Qtr. 2 cl, 2 2-hr labs. Prereq: 580 and permission of instructor.

693 Individual Studies U G 1-15

Individual study of a special problem or of a particular region.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable with permission of instructor.

694 Group Studies U G 3-5

Group study of special topics in various fields of geography.

Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

695 Undergraduate Seminar in Applied Geography U 5

The practical application of theoretical geographical concepts to problems in the local area.

Sp Qtr. 2 2-hr cl. Prereq: 20 cr hrs in geog.

Introduction to National Security

See Nat Sec Pol S 702.

740 Advanced Locational Analysis U G 5

Discussion of advanced problems in locational and regional analysis; application of programming techniques, the transportation model, spatial equilibrium analysis, multiregional activity analysis, and regional growth models.

Sp Qtrs. 2 2-hr cl. Prereq: 647 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

H783 Honors Course U 3-5

A program of individual study arranged for students enrolled in the honors program with individual conferences and reports; requires presentation and oral defense of an honors thesis.

Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the geog courses taken and an average of at least B in the remainder; written permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Repeatable to a maximum of 15 cr hrs. At least 2 qtrs are required of candidates for the degree BA *with distinction* in geog. Failure to receive a mark of S in this course is a disqualification for special honors.

Research Principles and Techniques in National Security

See Nat Sec Pol S 785.

795 Seminar in Geography U G 5

Introduction to research procedures, problem formulation and application of research techniques in geography.

Au, Wi, Sp Qtrs. 2 2-hr cl. Repeatable to a maximum of 20 cr hrs.

800 Seminars in Regional Geography G 3-5

The development of theory in regional development and its application to selected problems. Gauthier. Each decimal subdivision repeatable to a maximum of 20 cr hrs.

800.01 Theory of Regional Development
Wi Qtr. 2 cl.

800.02 Problems in Regional Development
Sp Qtr. 2 cl.

Seminar in National Security Research

See Nat Sec Pol S 801.

820 Seminars in Physical Geography G 3-5

Au, Wi, Sp Qtrs. 2 cl. Each decimal subdivision repeatable to a maximum of 20 cr hrs.

820.01 Problems in Climatology

820.03 Special Problems

821 Dynamic Climatology G 5

Dynamics, thermodynamics, energy conservation, flows, conversion processes; large scale circulation patterns with particular emphasis upon turbulence at

the synoptic scale; weather processes, and regional climates.

Wi Qtr. 2 2-hr cl. Prereq: 620 or permission of instructor.

822 Microclimatology G 5

Radiation and turbulence processes, conduction; variation in wind, temperature, humidity, soil moisture, evaporation, soil temperature; influence of vegetation and artificial structures.

Sp Qtr. 2 2-hr cl. Prereq: 620 or permission of instructor.

823† Applied Climatology G 5

Effects of climate upon plants and animals (bioclimatology), upon industrial processes and structures, and upon landforms; forecasting; climate modification.

Sp Qtr. 2 2-hr cl. Prereq: 620 or permission of instructor.

830 Seminars in Resource Analysis G 3-5

The development of theory in resource analysis and its application to selected problems.

Au, Wi, Sp Qtrs. Each decimal subdivision repeatable to a maximum of 30 cr hrs.

830.01 Theory of Resource Analysis

830.02 Problems in Resource Analysis

840 Seminars in Economic Geography G 3-5

Readings and research in specific aspects of economic geography.

Au, Wi, Sp Qtrs. 2 cl. Each decimal subdivision repeatable to a maximum of 20 cr hrs.

840.01 Location Theory

840.02 Special Topics

845 Seminars in Transportation Geography G 3-5

The development of theory in transportation geography and its application to selected problems.

Au, Wi, Sp Qtrs. Each decimal subdivision repeatable to a maximum of 30 cr hrs.

845.01 Theory of Transportation Geography

845.02 Problems in Transportation Geography

850 Seminars in Urban Geography G 3-5

The development of theory in urban geography and its application to selected problems.

Au, Wi, Sp Qtrs. 2 cl. Each decimal subdivision repeatable to a maximum of 20 cr hrs.

850.01 Theory of Urban Geography

850.02 Problems in Urban Geography

860 Seminars in Political Geography G 3-5

The development of theory in political geography and its application to selected problems.

Sp Qtr. Prereq: 660 or permission of instructor. Each decimal subdivision repeatable to a maximum of 30 cr hrs.

860.01 Theory of Political Geography

860.02 Problems in Political Geography

870 Seminars in Population and Social Geography G 3-5

The development of theory in population and social geography and its application to selected problems.

Au, Wi, Sp Qtrs. Each decimal subdivision repeatable to a maximum of 30 cr hrs.

870.01 Theory of Population and Social Geography

870.02 Problems in Population and Social Geography

880† Seminars in Cartography G 3-5

Readings and research in cartography.

Au Qtr. Repeatable to a maximum of 20 cr hrs.

882 Development of Geographic Thought G 4

The evolution of concepts concerning the nature, scope, and methodology of geography; present focus and trends as reflected in current literature.

Au Qtr. 3 cl.

883 Application of Quantitative Methods in Geography G 4

Application of quantitative methods to geographic problems; spatial statistics, area sampling, maps of residuals, regionalization methods, and simulation maps.

Au, Wi Qtrs. 2 cl, 2 lab hrs. Prereq: Course in introductory stat and permission of instructor. To be taken in sequence:

883.01 Applications I**883.02 Applications II****885† Field Work in Geography G 4**

The practice of field observation and geographic mapping.

Sp Qtr. 2 cl, Sat lab.

889 Seminars in Geography G 3-5

Au, Wi, Sp Qtrs. Repeatable to a maximum of 20 cr hrs. Topics to be announced each quarter.

Atmospheric Sciences Seminar

See Atmospheric Sciences 881.

896 Interdepartmental Seminar in Polar and Alpine Studies G 1-3

See Interdepartmental Seminars.

897 Interdepartmental Seminar in Natural Resources G 1

See Interdepartmental Seminars.

899 Interdepartmental Seminars G 1-5

See Interdepartmental Seminars. Topics to be announced each quarter.

983 Special Topics in Quantitative Geography G 5

Applications of advanced mathematical and statistical models to problems in geographical analysis.

Au, Wi, Sp Qtrs. 1 3-hr cl. Prereq: 883.01 and 883.02. Repeatable to a maximum of 15 cr hrs.

998 Research in Geography: Thesis G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

999 Research in Geography: Dissertation G Arr

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Geology and Mineralogy

Office: 107 Mendenhall Laboratory, 125 South Oval Mall, 422-2721

100 Introduction to Geology U 5

The materials of the earth's crust, the processes that

produce and modify them, and the development of the earth and its life forms through time.

Su, Au, Wi, Sp Qtrs. 4 cl, 1-hr lab arr, 1 half-day field trip. Not open to students with credit for 101 or 102. Recommended for nonscience majors.

101 Physical Geology U 5

Minerals and rocks and their origin; land forms and how they are produced; structural features of the earth's crust.

Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab, 1 half-day field trip. H101 (honors) may be available to students enrolled in an honors program or by permission of dept. Recommended first course in geol&min for science majors or those with substantial background in science.

102 Historical Geology U 5

The history of the earth and its inhabitants through geologic time.

Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab, 1 half-day field trip. H102 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 100 or 101. Recommended second course in geol&min for science majors or those with substantial background in science.

103 Geology and the Environment U 5

Application of basic geologic knowledge to problems resulting from man's use of the earth and its resources. McKenzie and Utgard.

Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 100 or 101.

201 Introduction to Paleontology U 5

An introduction to animal and plant groups significant in the geologic record. Sweet.

Sp Qtr. 4 cl, 1 2-hr lab arr. Prereq: 100 or 101.

204 Water Resources U 5

Occurrence, movement and behavior of water in the hydrologic cycle with reference to scientific and technological problems relating to water-resources development and conservation. Pettyjohn.

Wi Qtr. 5 cl, 2 ½-day field trips. Prereq: 100 or 101.

206 Oceanography and Marine Geology U 3

The origin, development, and structure of ocean basins and their contents; contemporary oceanic processes of geologic significance. Summerson.

Sp Qtr. 3 cl. Prereq: 100 or 101.

212* Common Minerals and Rocks U 3

A study of the common minerals and rocks, their associations, occurrences, identifying properties, and origin. Moore.

Wi Qtr. 3 2-hr labs. Prereq: 101 and Chem 121. Not open to geol majors or students with credit for 223.

214 Principles of Mineralogy U 5

An introductory course, emphasizing principles and illustrating the internal structure of solids and relationship of structure and chemical composition to properties, applications, and external features. Tettenhorst.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: Chem 122, Math 117 or 150. Not open to students with credit for 221.

217 Thermochemical Mineralogy U 3

Thermal properties of minerals; application of high temperature equilibrium to problems of technology, using phase diagrams. Foster.

Wi Qtr. 3 cl. Prereq or concur: Chem 205 or equiv. Not open to students with credit for 627.

218 Advanced Thermochemical Mineralogy U 3

Derivation and interpretation of phase diagrams of ternary and quaternary systems of importance in technology. Foster.

Sp Qtr. 3 cl. Prereq: 217. Not open to students with credit for 628.

221 Elementary Mineralogy and Crystallography U 3

Crystal systems, symmetry, common forms and cleavage of crystals; chemical bonding and mineral structures; selected phase diagrams; sight identification of about 80 common minerals using physical and chemical properties. Wenden.

Au, Wi Qtrs. 3 2-hr labs. Prereq: Chem 122. Not open to students with credit for 214.

222 Elementary Optical Mineralogy U 3

Elements of optical mineralogy; mineral properties in plane and cross-polarized light; mineral identification in powders and thin-sections; X-ray diffraction in mineral identification and mineral-mixture analysis. Wenden.

Wi, Sp Qtrs. 3 2-hr labs. Prereq: 221.

223 The Common Rocks U 5

Origin, occurrence, association, and mineral composition of the common rocks; laboratory includes work by megascopic and microscopic methods. Moore.

Au, Sp Qtrs. 2 cl, 3 2-hr labs. Prereq: 101 and 222. Not open to students with credit for 212.

225 Quantitative Methods in Geology U 3

Introduction to quantitative methods and techniques, both graphic and mathematical, and their application in the analysis of geologic data.

Au, Sp Qtrs. 2 cl, 1 2-hr lab. Prereq: 101; prereq or concur: 102 and Math 151; or permission of instructor.

226 Techniques of Field Geology U 3

Introduction to geological mapping instruments and techniques, illustration of geologic field data, interpretation of geologic maps and cross-sections. Corbato.

Sp Qtr. 2 2-hr labs. Prereq: 101, 102, Math 151.

294 Group Studies U 1-5

Group study of special topics in various fields of geology and mineralogy.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

502 Stratigraphy and Paleontology U G 5

Principles of, and procedures in, lithostratigraphy and biostratigraphy, illustrated by field and laboratory studies of sedimentary rocks and fossils. Collinson, Stanley, Sweet, and Ward.

Au, Sp Qtrs. 6 days in field in late Su or just preceding Au or Sp; 2 2-hr labs and field trips in Au or Sp Qtrs. Prereq: 102, 223, 225, and 10 cr hrs in biological sciences.

530 Structural Geology and Geophysics U G 5

A study of the principal kinds of geologic structures and their interpretation; an introduction to geophysical exploration of subsurface structures. Moore.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: 225 and Physics 132 or 133.

550 Geomorphology U G 5

Detailed study of processes that shape the land

surface and the forms produced under diverse climates. White.

Au, Sp Qtrs. 4 cl, 1 2-hr lab, field trips. Prereq: 101, 102, and Chem 122; or permission of instructor.

570 Senior Thesis U G 1

The preparation of a report of professional quality, based on a research project.

Su, Au, Wi, Sp Qtrs. Prereq: Sr standing in geol and permission of instructor. To be taken during the qtr the student intends to hand in the thesis.

580†* Field Work in Earth Science U G 5

Essentials of field observation, mapping and data accumulation in the solution of earth-science problems; the work is done in selected off-campus field localities. Mayer, McKenzie, and Utgard.

Sp Qtr. Requires full time of student for 5 wks. Prereq: 30 qtr hrs in geol&min, geog, astron or meteor, with a minimum of 15 qtr hrs in geol&min; Ed: Sc&Ma 551 and permission of instructor; Geol&Min 201, 212, and 550 recommended. Not open to geol majors.

581 Field Geology I U G 6

Concentrated training in the basic essentials of field observation and mapping; the work is done in central Utah, with headquarters in Ephraim. Collinson, Moore, Elliot and Stanley.

Su (1st term) Qtr. Requires full time of student. Prereq: 223, 225, and 226 and permission of instructor; 530 recommended.

582 Field Geology II U G 6

Continuation of 581.

Su (2nd term) Qtr. Requires full time of student. Prereq: 581.

583† Field Geology for Science Teachers U G 3

Application of geological principles in the field; interpretation of earth features observable on a traverse crossing the Appalachian Mountain system. Mayer, McKenzie, and Utgard.

Sp Qtr. 5-day period during recess between Wi and Sp; pre-trip meeting and post-trip report. Prereq: 100 or equiv and permission of instructor. Intended primarily for in-service teachers. Not open to geol majors.

600 Sedimentation and Sedimentary Rocks U G 5

Source, dispersal, and accumulation of sediments; the interpretation of the environmental distribution of sedimentary rocks. Summerson.

Au Qtr. 2 2-hr cl, 1 3-hr lab arr. Prereq: 502.

601 Sedimentary Petrology U G 5

Identification and interpretation of sedimentary rocks based on mineralogic and textural study of thin sections and hand specimens. Stanley.

Prereq: 600 or permission of instructor.

601.01 Sedimentary Petrology of Sandstones

Sp Qtr. 3 cl, 2 2-hr labs. Not open to students with credit for 601.

601.02 Sedimentary Petrology of Carbonate Rocks and Shales

Wi Qtr. 3 cl, 2 2-hr labs. Not open to students with credit for 601.

603 Stratigraphy U G 5

Advanced study of the principles and procedures of stratigraphic nomenclature, subdivision, correlation, and interpretation, with examples from the international stratigraphic record. Bergstrom, Collinson, and Sweet.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 502.

614 Paleobiology U G 5

Advanced consideration of the preservation, morphology, development, interrelations, and paleoecologic significance of fossil animals and plants. Bergstrom, Schopf, Sweet, and Ward.
 Au, Wi Qtrs. 2 cl, 3 2-hr labs. Prereq: 201 or 502.
 Repeatable to a maximum of 10 cr hrs.

616 Advanced Physical Geology U G 5

Review of physical geology at an advanced level, including geophysics, structural geology, geochemistry, isotope geology, tectonics and geomorphology.
 Au Qtr. 5 cl. Prereq: 530 and 550, or permission of instructor.

617 Petrology U G 5

Major rock-forming processes; hand specimen and microscopic examination, distribution, and tectonic significance of igneous, sedimentary, and metamorphic rocks. Ehlers, Elliot, Moore and Stanley.
 Au Qtr. 3 cl, 2 2-hr labs. Prereq: 223 or 623 or equiv with written permission of instructor.

620 Introduction to Isotope Geology U G 5

Theory of natural isotope abundance variations and applications to problems in the earth sciences. Faure and Sutter.
 Wi Qtr. 5 cl. Prereq: Sr standing in geol&min or related fields.

621 Introduction to Geochemistry U G 5

Applications of the law of mass action and chemical thermodynamics to mineral equilibria of geological and geochemical interest. Faure.
 Au Qtr. 5 cl. Prereq: Sr standing in geol&min or related fields; Chem 123 or permission of instructor.

622†* Applied Geochemistry U G 5

Geochemical applications to geology including oxidation-reduction reactions, chemical equilibria in the ocean, and geochemical prospecting. Faure.
 Wi Qtr. 5 cl. Prereq: 621.

623 Microscopic Mineralogy U G 5

Theory and use of polarizing microscope; determination of optical constants and identity of minerals. Ehlers.
 Au Qtr. 2 cl, 3 2-hr labs. Prereq: 214 or 222, and Physics 112 or equiv.

624†* Microscopy of Opaque Minerals U G 3

Application of the petrographic microscope to the study of opaque minerals and ores, their identification, textures, and paragenesis; polished section preparation, etch tests, and micro-chemical tests. Wenden.
 Sp Qtr. 3 2-hr labs. Prereq: 623 or equiv.

625 Igneous Petrology U G 5

Petrography, petrogenesis, and occurrence of igneous rocks, with special emphasis on phase equilibria; macroscopic and microscopic examination of igneous and petrographic suites in the laboratory. Ehlers and Elliot.
 Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 223 and permission of instructor, or 623.

626 Metamorphic Petrology U G 5

Petrography, petrogenesis, and occurrence of metamorphic rocks; macroscopic and microscopic examination of metamorphic rocks and selected petrographic suites in the laboratory. Ehlers and Elliot.

Sp Qtr. 3 cl, 2 2-hr labs. Prereq: 223 and permission of instructor, or 623.

629 Physico-Chemical Petrology U G 3

Application of phase equilibrium diagrams to problems of igneous and metamorphic petrology. Foster.
 Au Qtr. 3 cl. Prereq: 223 and Chem 123 or permission of instructor. Not open to students with credit for 627.

635 Advanced Crystallography U G 5

Principles of crystallography; morphology, structure and habit in crystals; twinning; two-circle goniometer measurement and drawing of crystals; crystallographic calculations; investigations with precession X-ray camera. Wenden.
 Au Qtr. 3 cl, 2 2-hr. labs. Prereq: 214, 221, or equiv.

636 Advanced Mineralogy U G 3 or 5

Mineral stoichiometry and calculations; application of instrumental methods to mineral identification and the study of mineral suites from selected localities; physical and chemical properties, and paragenesis of minerals on crystal chemical principles. Wenden.
 Wi Qtr. 3 cl or 3 cl, 2 2-hr labs. (lab optional) Prereq: 214, 221 or equiv.

637 X-Ray Powder Diffraction U G 5

Emphasis on diffractometry; evaluation of instrumental, geometrical, and other factors affecting intensity and position of diffraction maxima; qualitative and quantitative analysis, particle size, and other applications. Tettenhorst.
 Wi Qtr. 3 cl, 2 3-hr. labs. Prereq: 214 and Math 153.

638† X-Ray Crystallography U G 5

Principles of X-ray crystal analysis; phase identification by powder film and diffractometer methods; X-ray fluorescent analysis; particle size determination; unit cell and space group by rotation and Weissenberg methods. Wenden.
 Sp Qtr. 3 cl, 2 3-hr. labs. Prereq: 214, 221, or equiv.

639 Clay Mineralogy U G 3

Relationship of structures and chemical composition of clay minerals to properties, origin, occurrence, and applications; evaluating of X-ray, differential thermal, infrared, and electron microscope data. Tettenhorst.
 Sp Qtr. 3 cl. Prereq: 637 or permission of instructor.

640 Fundamentals of Geophysics U G 5

Analytical treatment of the methods of gravimetry, seismology, terrestrial electricity, terrestrial heat and geomagnetism; the structure, composition and history of the earth. Bull and Noltimier.
 Au Qtr. 4 cl, 1 2-hr lab. Prereq: 530.

643† Geophysics Gravimetry U G 3

Analytical treatment of concepts and methods of gravimetry; introductory theory of the gravitational potential; geological interpretation of gravity data. Bull.
 Au Qtr. 3 cl, Prereq: 4th yr standing in geod sci, physics, geol, civil en and 100 or 101.

645 Advanced Structural Geology U G 5

Rock mechanics, mechanisms of deformation, geotectonics, and structural analysis; solution of structural problems. Sutter.
 Sp Qtr. 4 cl, 1 2-hr lab. Prereq: 530.

650 Glacial and Pleistocene Geology U G 5

The features produced by glaciers, present and past, and the history of glaciation during the Pleistocene.
 Sp Qtr. 5 cl, field trips. Prereq: 550.

651 Hydrogeology U G 5

Geologic and hydrologic factors controlling the occurrence and behavior of ground water. Pettyjohn. Sp Qtr. 5 cl, 2 1/2-day field trips. Prereq: Sr standing in geol, or 4th yr standing in engr and 101; or 101 and 204.

660 Geology of Mineral Deposits U G 5**660.01 Geology of Metallic Deposits**

The occurrence, origin, distribution, properties, and uses of the metallic minerals. Pride.

Au Qtr. 4 cl, 1 2-hr lab. Prereq: 223.

660.02+* Geology of Nonmetallic Mineral Deposits

The occurrence, origin, distribution, properties, and uses of the nonmetallic minerals.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: 223.

661 Petroleum Geology U G 5

A study of the principles of petroleum geology.

Sp Qtr. 3 cl, 2 2-hr labs. Prereq: 502 and 530.

670 General and Economic Geology of Selected Areas U G 5

Concentrated field study of the stratigraphy, structural geology, tectonics, petrology, and geomorphology of a selected region, with special attention to the economic utilization of earth materials. Pride and Summerson.

Au Qtr. 10-day field trip preceding Au qtr. Post-trip readings and report. Prereq: 502, 530 and 550, or permission of instructor. Repeatable to a maximum of 15 cr hrs.

675 Use of the Scanning Electron Microscope U G 1

Instruction in the use of the scanning electron microscope. Sweet.

Au, Sp Qtrs. lab, arr. Prereq: Written permission of instructor.

693 Individual Studies U G 1-5

Special problems in any branch of geology and mineralogy for which the student has the proper qualifications.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 45 cr hrs in any combination of decimal subdivisions.

693.01 Economic Geology**693.02 Engineering Geology****693.03 Extraterrestrial Studies****693.04 Field Geology****693.05 Geochemistry****693.06 Geomorphology****693.07 Geophysics****693.08 Glaciology and Glacial Geology****693.09 History of Geology and Mineralogy****693.10 Hydrogeology****693.11 Marine Geology, Limnology, and Oceanography****693.12 Paleontology****693.13 Petrology and Petrography****693.14 Photogeology****693.15 Sedimentation****693.16 Stratigraphy****693.17 Structural Geology****693.18 Earth Science Education****693.19 Unspecified****693.20 Thermochemical Mineralogy****693.21 Crystallochemical Mineralogy****693.22 X-Ray Mineralogy****693.23 Clay Mineralogy****693.24 Physical Properties of Crystals****694 Group Studies U G 1-5**

Group study of special topics in various fields of geology and mineralogy.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

H783 Honors Course U 3-5

A program of individual study arranged for students enrolled in the honors program, with individual conferences and reports; requires presentation and oral defense of an honors thesis.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the geol and mineral courses taken and an average of at least B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degree BA or BS with distinction in geol and mineral. Failure to receive the mark of S in this course is a disqualification for departmental honors. Repeatable to a maximum of 15 cr hrs.

800 Seminar in Stratigraphy G 3

Consideration of current and classical problems and procedures in biostratigraphic and lithostratigraphic analysis and synthesis. Bergstrom, Collinson, Summerson, and Sweet.

Au, Wi Qtrs. 22-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

801 Seminar in Sedimentation and Sedimentary Rocks G 3

Consideration of sedimentation, and the structures, petrography, depositional environments, and paleogeologic interpretation of sedimentary rocks. Collinson, Stanley, and Summerson.

Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

810 Seminar in Paleobiology G 3

Advanced topics in paleozoologic and paleobotanic morphology, taxonomy, and procedure; current questions in biostratigraphy, paleoecology, and evolutionary development of fossil floras and faunas. Bergstrom, Schopf, Sweet, and Ward.

Au Qtr. 2 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

821 Seminar in Isotope Geology and Geochemistry G 3

Discussion of selected topics in isotope geology, geochronology, geochemistry, and cosmochemistry. Faure and Sutter.

Sp Qtr. 2 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

822 Seminar in Petrology and Optical Mineralogy G 3

Selected topics in optical mineralogy and igneous, sedimentary, and metamorphic petrology. Ehlers, Elliot, and Moore.

Au Qtr. 2 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

823 Seminar in Experimental Mineralogy and Petrology G 3

Selected topics in hydrothermal and high pressure mineralogy and petrology. Ehlers and Foster.

Wi Qtr. 2 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

824 Seminar in Structural Mineralogy G 3

Selected topics in advanced mineral structures, clay mineralogy, crystal growth, and crystal physics. Tettenhorst.

Wi Qtr. 2 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

840 Seminar in Geophysics and Structural Geology G 3

Selected topics in solid-earth geophysics, glaciology, tectonics, structural analysis, or continental and ocean-basin structure. Bull, Corbato, Moore, Noltmeyer, and Sutter.

Sp Qtr. 2 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

850 Seminar in Geomorphology and Quaternary Geology G 3

Current and classical problems in geomorphology and Quaternary geology, such as desert and coastal geomorphology, submarine topography, periglacial and karst morphology, volcanology, and Quaternary geochronology. White.

Au, Wi Qtrs. 2 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

851 Seminar in Hydrogeology and Oceanography G 3

Topics in hydrogeology and oceanography, such as groundwater hydrology and hydraulics, basin management, reef and atoll development, or paleo-oceanography. Pettyjohn.

Wi Qtr. 2 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

860 Seminar in Mineral Deposits and Fossil Fuels G 3

Study of selected deposits of metallic minerals, industrial rocks, and minerals, or fossil fuels. Faure, Pride, and Schopf.

Wi Qtr. 2 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

874 Seminar in the History of Geology and Mineralogy G 3

Discussion of the development of geology and mineralogy, intended to give the student a firm basis for comprehension of the science as it exists today. Wenden.

Sp Qtr. 3 cl. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs.

896 Interdepartmental Seminar in Polar and Alpine Studies G 1-3

See Interdepartmental Seminars.

999 Research in Geology and Mineralogy G Arr

Research for thesis and dissertation purposes only. Su, Au, Wi, Sp Qtrs.

in high school. Such tests are given during Summer Orientation and on the first day of instruction in each quarter. Consult the Humanities section of the Colleges of the Arts and Sciences bulletin or the dept. Students who are given advanced standing in the dept as a result of the placement and proficiency examination become eligible for University credit.

Excess Entrance Credits in German

Freshmen who have excess credits in foreign language are eligible for examination for advanced standing. The examination is given at the same time as the placement tests mentioned above.

101 Elementary German I U 5

Su, Au, Wi, Sp Qtrs. 5 cl.

102 Elementary German II U 5

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 101 or equiv.

103 Intermediate German I U 5

Reading; oral and written practice; grammar review; students may select from among the following subdivisions which emphasize specific skills and subject matter.

Su, Au, Wi, Sp Qtrs. (Not all decimal subdivisions offered every qtr.) 5 cl. Prereq: 102 or 110 or equiv.

103.01 Basic

Balanced use of the basic language skills: reading, aural comprehension, speaking, and writing.

Not open to students with credit for 103.

103.02 Conversation

Emphasis on speaking and aural comprehension.

Not open to students with credit for 103.

103.03 Humanities and Civilization

Emphasis on reading in the humanities and in German culture and civilization.

Not open to students with credit for 103.

103.04 Literature

Emphasis on the reading of German literary texts.

Not open to students with credit for 103.

103.05 Science

Introductory readings in scientific German.

Not open to students with credit for 103 or 113.

104 Intermediate German II U 5

Reading; oral and written practice; vocabulary building; students may select from among the following subdivisions which emphasize specific skills and subject matter.

Su, Au, Wi, Sp Qtrs. (Not all decimal subdivisions offered every qtr.) 5 cl. Prereq: 103 or 112 or 113.

104.01 Basic

Balanced use of the basic language skills: reading, aural comprehension, speaking and writing.

Not open to students with credit for 104.

104.02 Conversation

Emphasis on speaking and aural comprehension.

Not open to students with credit for 104.

104.03 Humanities and Civilization

Emphasis on reading in the humanities and in German culture and civilization.

Not open to students with credit for 104.

104.04 Literature

Emphasis on the reading of German literary texts and topics.

Not open to students with credit for 104.

104.05 Science

Advanced readings in scientific German.

Not open to students with credit for 104 or 114.

109 Elementary German Conversation U 3

Au, Wi, Sp Qtrs. 3 cl. Prereq: 102 or 110; also open to students with grade of A in 101. No audit.

German

Office: 314 Dieter Cunz Hall of Languages, 1841 Millikin Road, 422-6985

Placement and Proficiency Examinations

In order to insure proper registration, placement tests are required of all students who continue their study of German in the dept after beginning their language

110 Intensive Elementary German U 5, 10

Elementary German for students who wish to acquire the basic language skills in one quarter; equivalent to 101 and 102.

Wi, Sp Qtrs. 10 cl. Prereq: Permission of dept. Not open to students with credit for 102. Students with credit for 101 or the equiv may not register for more than 5 cr hrs.

112 Intensive German U 5, 10, 15

Elementary and intermediate German for students desiring comprehensive knowledge of German in the shortest possible time; students will devote their entire time to this course.

Su Qtr. Enrollment limited to 20 students. Prereq: Permission of dept. Full time of student and full fees required. Students with credit for 101 or the equiv may not register for more than 10 cr hrs. Students with credit for 101 and 102 or the equiv may not register for more than 5 cr hrs. Students with credit for 103 or the equiv may not register for credit. No audit.

162 Elementary-Intermediate German for Selected Students U 5

Wi Qtr. 5 cl. Prereq: Grade of A in 101. Not open to students with credit for 117.

163 Elementary-Intermediate German for Selected Students U 5

Continuation of 162.

Sp Qtr. 5 cl. Prereq: 162. Not open to students with credit for 118. Successful completion of the sequence 101-162-163 fulfills the Arts and Sciences foreign language requirement and provides eligibility for 200-level courses.

203 Intermediate German Conversation U 3

Practice in spoken everyday idiomatic German, based on texts concerning German life today.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 104.02, any other 104 course and 109 with a minimum grade of C, or permission of instructor. 203 may be taken concur with 204. No audit.

204 German Composition I U 2

Practice in simple writing with some conversation.

Au, Wi, Sp Qtrs. 2 cl. Prereq: 104.02, any other 104 course and 109 with a minimum grade of C, or permission of instructor. 204 may be taken concur with 203. No audit.

205 German Composition II U 2

Themes, reports, and translations of difficult texts.

Wi, Sp Qtrs. 2 cl. Prereq: 204.

221 Introduction to German Literature: The 20th Century U 5

Readings from representative authors such as Mann, Schnitzler, Duerrenmatt.

Au, Sp Qtrs. 5 cl. Prereq: Either 104, 163, or equiv. Students are advised to register also for 203 and 204. Not open to students with credit for 227.

222 Introduction to German Literature: The 19th Century U 5

Readings from Brentano, Hoffmann, Storm, and Keller.

Au, Wi, Qtrs. 5 cl. Prereq: Either 104, 163, or equiv. Students are advised to register also for 203 or 204. Not open to students with credit for 226.

260 Early German Literature in Translation U 3

Trends in German literature of the Middle Ages, the

Renaissance and the Reformation as reflected in representative literary monuments.

Au Qtr. 3 cl. Credit does not apply toward a major in German. Taught in English.

261 German Classics in Translation U 3

Social and intellectual forces in Germany as reflected in German literature from the Enlightenment to the middle of the 19th century; masterpieces from Goethe to Gottfried Keller.

Wi Qtr. 3 cl. Credit does not apply toward a major in German. Taught in English.

262 Modern German Literature in Translation U 3

Intellectual forces and literary trends in German literature from the end of the 19th century to the present; masterpieces from Gerhart Hauptmann to Bertolt Brecht.

Sp Qtr. 3 cl. Credit does not apply toward a major in German. Taught in English.

293 Individual Studies U 2-5

Individual investigation of minor problems in German language and literature.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of chairman. Repeatable to a maximum of 10 cr hrs.

294 Group Studies U 2-5

Investigation of minor problems in German literature and language.

Au, Wi, Sp Qtrs. Prereq: Written permission of chairman. Repeatable to a maximum of 10 cr hrs.

299 German Literature and Film in the Twenties and Early Thirties U 5

Culture of the Weimar Republic: *Caligari*, *Blue Angel*, Nazi documentaries, other classic films; works by Kafka, Hesse, Brecht.

Sp Qtr. 3 cl. Taught in English.

361 German Civilization I U 3

The cultural heritage of the German people from the beginning to about 1500; institutions, phases of civilization, interrelationship of social and literary history.

Au Qtr. 2 2-hr cl. Taught in Engl.

362 German Civilization II U 3

German civilization from Luther to the Age of Goethe; cultural trends, social changes, historical development to the end of the Holy Roman Empire.

Wi Qtr. 3 cl. Taught in Engl.

409 Advanced German Conversation U 3

Wi Qtr. 3 cl. Prereq: 203.

410 Advanced German Composition U 3

Writing and discussion of compositions, practical review of grammar in context, and practice in translation.

Au Qtr. 3 cl. Prereq: 203 and 205 or permission of instructor. Not open to students with credit for 630.

421 Survey of German Literature 1700-1870 U 5

Development of German literature in its historical, social, and philosophical context from the Age of Enlightenment to German unification.

Wi Qtr. 5 cl. Prereq: 8 cr hrs from the following 200 level courses: 203, 204, 205, 221, or 222.

**422 Survey of German Literature
1870-present U 5**

Development of German literature in its historical, social, and philosophical context from 1870 to present.

Sp Qtr. 5 cl. Prereq: 8 cr hrs from the following 200 level courses: 203, 204, 205, 221, or 222.

463* German Civilization III U 3

Intellectual, artistic, and social trends in the German speaking countries from 1815 to the present.

Sp Qtr. 3 cl. Prereq: 10 cr hrs in 200-level courses in German with the exception of 260, 261, and 262. Taught in German.

**571 Basic German for Graduate
Students G 5**

The fundamentals of German grammar, as required for the reading of German texts in the sciences and humanities.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: Grad standing. Credit does not apply to the minimum hours required for the Master's or doctoral degrees. No audit.

572 German for Research I G 3

Satisfactory completion of this course (grade of A or B) may be accepted by the student's dept as evidence of a dictionary reading knowledge in fulfillment of PhD language requirement.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Grade of C or above in 571 or equiv preparation demonstrated by a placement test. Open only to grad students. Credit does not apply to the minimum hours required for the Master's or doctoral degrees. No audit. Repeatable twice.

573 German for Research II G 3

Reading of difficult material at a reasonable rate of speed and with only infrequent use of dictionaries. Completion of this course with a grade of A or B may be accepted by the student's dept as evidence of a thorough reading knowledge of German.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Grade of A or B in 572, or equiv preparation demonstrated by a placement test and permission of instructor. Open only to grad students. Credit does not apply to the minimum hours required for the Master's or doctoral degrees. No audit. Repeatable twice.

**General Prerequisites for Courses
Numbered 600**

Unless otherwise indicated, the prerequisites for all 600-level courses are: either 221 or 222, either 421 or 422, plus a minimum of 5 cr hrs of 203, 204, 409, 410. Exceptions may be allowed by instructors for students with special qualifications.

**605†* Introduction to the Study
of Language U G 3**

Elements of linguistics with emphasis on the historical study of languages and on semantics; the position of Germanic in the Indo-European family of languages.

Sp Qtr. 3 cl.

**606 Introduction to the Historical
Study of German U G 3**

The historical development of the German language, with a short survey of the Germanic languages; internal and external influences which have determined its characteristics (phonology, morphology, and vocabulary).

Sp Qtr. 3 cl.

611 Medieval German Literature U G 3

Survey of German literature from the 8th century to the end of the Middle Ages.

Au Qtr. 3 cl.

**612 Literature of Humanism,
Reformation, and Baroque U G 3**

Survey of German literature from 1400 to 1700.

Wi Qtr. 3 cl.

621 The German "Novelle" U G 3

Reading and analysis of masterpieces of the 19th and 20th centuries: Kleist, Eichendorff, Stifter, Keller, and Thomas Mann.

Au Qtr. 3 cl.

622 The German Drama U G 3

Reading and analysis of masterpieces of the 19th and 20th centuries: Schiller, Kleist, Grillparzer, Hebbel, and Brecht.

Wi Qtr. 3 cl.

623 German Lyrics U G 3

Analysis of German lyrics from 1200 to the present; study of specific forms: Volkslied, ballad, sonnet, and individual great lyricists.

Sp Qtr. 3 cl.

630 Introduction to Stylistics U G 3

Composition on assigned topics, intensive translation, and comparative study of usage designed to develop a sophisticated expository style in the writing of German.

Wi, Sp Qtrs. 3 cl. Prereq: 410, or 205 and written permission of instructor.

**635 Practical German
Pronunciation U G 3**

Standard German pronunciation; oral and written drill.

Sp Qtr. 2 2-hr cl. Prereq: Permission of instructor.

650 Proseminar U G 1 or 3

Su, Sp Qtrs. 3 cl, 3 cr hrs. Su (1st term). 3 cl, 1 cr hr. Prereq: Permission of chairman. Repeatable to a maximum of 24 cr hrs.

**660† Masterpieces of German
Literature U G 3**

Selections from works of major German writers; topic varies each year.

Su Qtr. 3 cl. Prereq: Permission of chairman.

Repeatable to a maximum of 18 cr hrs.

693 Individual Studies U G 2-5

Investigation of minor problems in the various fields of German literature and philology.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of chairman.

Repeatable to a maximum of 30 cr hrs.

694† Group Studies U G 2-15

Investigation of minor problems in the various fields of German literature and philology.

Sp Qtr. Prereq: Permission of chairman. Repeatable to a maximum of 30 cr hrs.

698 Study Tour of Germany U G 15

The first five weeks will be devoted to intensive study on this university campus; the remainder of the course will be spent in travel in Germany; in Germany only German will be spoken and formal instruction will be given daily by the tour leader.

Sp Qtr. Prereq: Minimum of 25 cr hrs in German or equiv, and permission of dept chairman.

**General Prerequisites for Courses
Numbered 700**

Prerequisites for 700-level courses are grad standing, or 4th yr standing with 9 cr hrs in German at the 600-level, and permission of chairman.

700 College Teaching of German U G 3

Methods and techniques for teaching German at the college level.

Au Qtr. 3 cl.

721†* German Literature of the 18th Century U G 4

The literature of the Enlightenment and Storm and Stress; Lessing, Klopstock, Wieland, young Goethe, young Schiller.

Au Qtr. 4 cl.

722†* German Classical Literature U G 4**722.01 Classical Literature I**

The genesis of classicism and the emergence of classical aesthetics; Goethe, Schiller.

Wi Qtr. 4 cl.

722.02 Classical Literature II

The later development and significance of classicism; Schiller, late Goethe, Hölderlin, Kleist.

Sp Qtr. 4 cl.

723* Goethe's Faust U G 3

History of the Faust legend from the 16th century to Goethe; reading and discussion of the play.

Wi Qtr. 3 cl.

724* German Romanticism U G 4

Ideas, themes, and creative achievements of the Romantic Age as reflected in such authors as Novalis, the Schlegels, Tieck, Brentano, Hoffmann, Eichendorff, Jean Paul.

Au Qtr. 4 cl.

725* German Literature of the 19th Century U G 4

Literary forces and trends from Goethe's death to the founding of the German Reich (Grillparzer, Buechner, Hebbel, Raimund, Moerike, Stifter, Keller, and Meyer).

Wi Qtr. 4 cl.

726* Modern German Literature, 1890-1933 U G 4

Main currents of German literature from Naturalism to the Third Reich; Hauptmann, Schnitzler, Mann, Rilke, George, Hofmannsthal, Kafka, Expressionism.

Sp Qtr. 4 cl.

727* Contemporary German Literature U G 4

Nazi and Opposition writing, exile literature, postwar German literature; Brecht, Dürrenmatt, Frisch, Grass, Böll, Johnson, Weiss, Celan, Bobrowski, Hacks, Christa Wolf.

Sp Qtr. 4 cl.

730 Advanced Stylistics U G 3

Stylistic analysis on an advanced level of German prose: compositions, reports, and discussion.

Wi Qtr. 3 cl. Prereq: Grade of A in 630, or permission of instructor.

777 Colloquium in German Literature U G 2-5

Selected topics, problems, and works in the various fields of German literature.

Au, Wi, Sp Qtrs. Arr. Prereq: Permission of chairman. Repeatable to a maximum of 30 cr hrs.

H783 Honors Course U 3-5

Offers undergraduates with special aptitudes a greater opportunity to do independent study than is possible in the ordinary course.

Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing with a grade of A in at least half of the German courses and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Science Honors Committee. Repeatable to a maximum of 15 cr hrs.

General Prerequisites for Courses Numbered 800

Prerequisites for 800-level courses are graduate standing and permission of chairman.

800 Bibliography and Method G 3

The tools, problems, and methods of literary research.

Au Qtr. 2 cl. Required of all candidates for grad degrees.

801* Middle High German G 4

Middle High German texts; methods of textual criticism.

Au Qtr. 4 cl.

802* Old Saxon and Old High German G 4

Readings from the Heliand and selected Old High German texts.

Wi Qtr. 4 cl.

803* Gothic G 3

Readings from the Bible; Gothic as a basis for the comparative study of the Germanic languages and historical German phonology and morphology.

Sp Qtr. 3 cl.

806†* History of the German Language G 3

Basic concepts of historical linguistics; the major factors of change in the history of German from Proto-Germanic to the present.

Wi Qtr. 3 cl. Prereq: 801.

821†* History of German Literature until 1700 G 3

Readings from the earliest period to the end of the 17th century.

Au Qtr. 3 cl.

822†* History of German Literature until 1700 G 3

Continuation of 821.

Wi Qtr. 3 cl.

823†* History of German Literature until 1700 G 3

Continuation of 822.

Sp Qtr. 3 cl.

860 Seminar in German Literature G 5

Selected topics from German Literature after 1500; problems of methods and interpretation.

Su, Au, Wi, Sp Qtrs. 2 cl.

870 Seminar in German Linguistics G 3

Selected topics from medieval literature, word history, stylistics, and psychology of language.

Au, Wi Qtrs. 2 cl.

Medieval and Renaissance Culture

See Medvl and Renais S 888.

Medieval and Renaissance Literature

See Medvl and Renais S 889.

993 Individual Studies G 1-5

With the approval of department chairman, doctoral students may register for individual study in areas normally not covered by courses.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of chairman. Repeatable to a maximum of 15 cr hrs.

998 Research in German: Thesis G Arr

Research for Master's thesis.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 20 cr hrs.

999 Research in German: Dissertation G Arr

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Graduate School

Office: 250 University Hall, 230 North Oval Mall, 422-6031

801 College Teaching G 2

Designed to acquaint prospective college teachers with the major problems involved in college teaching.

801.01 College Teaching

Emphasizes teaching skills.

801.02 College Teaching

Emphasizes the role of the college faculty member.

999 Research: Interdisciplinary G Arr

Research approved by Graduate School in special interdisciplinary programs.

Greek

Office: 414 University Hall, 230 North Oval Mall, 422-2744

See Classics also.

101 Elementary Greek U 5

Amaral.

Au Qtr. 5 cl.

102 Elementary Greek U 5

Snyder.

Wi Qtr. 5 cl. Prereq: 101.

103 Intermediate Greek Reading U 5

Snyder.

Sp Qtr. 5 cl. Prereq: 102.

110† Intensive Elementary Greek U 5, 10

Wi Qtr. 10 cl. Prereq: Permission of dept. Not open to students with credit for 102. Students with credit for 101 or the equiv may not register for more than 5 cr hrs.

112 Intensive Introduction to Greek U 5, 10, 15

Vaughn.

Su Qtr. 10 cl and 10 or more hours of supervised study. Full time of student and full fees required. Equiv of 101, 102 and 103. Students with credit for 101 or the equiv may not register for more than 10 cr hrs.

Students with credit for 101 and 102 or the equiv may not register for more than 5 cr hrs. Students with credit for 103 or the equiv may not register for credit.

151 Elementary Modern Greek U 5

Elements of modern Greek: sound and writing systems; phonology; morphology of noun and verb. Written and oral practice. Cairns.

Au Qtr. 5 cl.

152 Elementary Modern Greek U 5

Continuation of 151: further study of morphology and syntax with reading of longer texts. Extensive written and oral practice. Cairns.

Wi Qtr. 5 cl. Prereq: 151.

153 Intermediate Modern Greek U 5

Grammatical review, with attention to variations of morphology and syntax between Demotic and Katharevousa styles. Prose reading assignments and written and oral practice. Cairns.

Sp Qtr. 5 cl. Prereq: 152.

154 Intermediate Modern Greek U 5

Continuation of 153 with assigned reading from Demotic and Katharevousa sources, including newspaper and periodical articles. Cairns.

Au Qtr. 5 cl. Prereq: 153 or permission of instructor.

221 Attic Prose U 5

Babcock.

Au Qtr. 5 cl. Prereq: 103 or 112.

222 Euripides U 5

Hahn.

Wi Qtr. 5 cl. Prereq: 210 or 221. Not open to students with credit for 202.

223 Homer U 5

Lenardon.

Sp Qtr. 5 cl. Prereq: 210 or 221. Not open to students with credit for 200.

224† The Greek Historians U 5

Amaral.

Au Qtr. 5 cl. Prereq: 103 or 112.

225† Sophocles U 5

Babcock.

Wi Qtr. 5 cl. Prereq: 221 or 224.

293 Individual Studies U 1-3

Intermediate readings in Greek literature.

Su, Au, Wi, Sp Qtrs. Prereq: 101-103 and 221 or equiv; written permission of dept. Repeatable to a maximum of 10 cr hrs.

551† Advanced Modern Greek I U G 3

Extensive reading from literary prose, with practice in conversation and composition.

Wi Qtr. 3 cl. Prereq: 154 or permission of instructor.

552 Advanced Modern Greek II U G 3

Reading from prose and poetry, with advanced practice in conversation and composition. Friar.

Wi Qtr. 3 cl. Prereq: 551 or permission of instructor.

604 Herodotus U G 3

Lacey.

Sp Qtr. 3 cl. Prereq: 2 courses at 200 level. Not open to students with credit for 201 except by permission of chairman.

605† Euripides U G 3

Snyder.

Au Qtr. Prereq: 2 courses at 200 level.

606 Sophocles U G 3

Davis.

Sp Qtr. 3 cl. Prereq: 2 courses at 200 level.

607† Homer U G 3Readings from the *Odyssey*. Schlam.

Wi Qtr. Prereq: 2 courses at 200 level.

608†* Readings from Attic Prose U G 3

Readings from the Attic Orators or Xenophon or Thucydides.

Prereq: 2 courses at the 200 level.

608.01 The Orators

Sp Qtr.

608.02 The Historians, Thucydides and Xenophon

Lenardon.

Wi Qtr.

609 Readings in Plato U G 3

Schlam.

Au Qtr. 3 cl. Prereq: 2 courses at 200 level.

612† Attic Prose Composition U G 3

Review of elementary syntax leading to composition of sentences and short connected passages; concurrent readings from Lysias or Xenophon. Lenardon.

Sp Qtr. Prereq: At least 1 course at 600 level.

693 Individual Studies U G 1-6

Passages for reading and topics for investigation will be selected to meet the needs of individual students.

Su, Au, Wi, Sp Qtrs. Prereq: 2 courses at 600 level, or permission of instructor. Repeatable to a maximum of 15 cr hrs.

694 Group Studies U G 1-6

Au, Sp Qtrs. Prereq: 4 courses more advanced than 104, or permission of chairman. Repeatable to a maximum of 20 cr hrs.

H783 Honors Course U 3-5

A program of study arranged for each student with individual conferences, reports and an honor thesis.

Su, Au, Wi, Sp Qtrs. arr. Prereq: 4th yr standing with a grade of "A" in at least half of the Greek courses taken and with an average of "B" in the remainder; written permission of instructor under whose supervision the work is to be completed and the ASC Honors Committee; at least 2 qtrs are required of candidates for the degree BA *with distinction* in Greek. Failure to receive a mark of "S" in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs.**General Prerequisites for Courses Numbered 800 and Above***Prerequisites for admission to courses numbered 800 and above are grad standing and permission of the chairman.***803† Sophocles G 4**

Amaral.

Wi Qtr.

805† Lyric Poetry G 4

Wi Qtr.

807 Euripides G 4

Lenardon.

Wi Qtr.

811† Greek Dialects G 4

Vaughn.

Au Qtr.

813† Demosthenes G 4

Sp Qtr.

815† Aristophanes G 4

Sp Qtr.

818† Thucydides G 4

Lenardon.

Sp Qtr.

819 Plato G 4

Hahm.

Sp Qtr.

821 Comparative Grammar of Greek and Latin G 4

Vaughn.

Au Qtr. Not open to students with credit for 810 or Latin 820 and 821.

831 Homer and the Homeric Language G 4

Lenardon.

Sp Qtr.

832 Hesiod G 4

Tracy.

Su Qtr.

833† Pindar G 4

Sp Qtr.

834† Aeschylus G 4

Sp Qtr.

835† Aristotle G 4

Hahm.

Au Qtr.

836† Hellenistic Literature G 4

Su Qtr.

855 Greek Epigraphy G 3

An introduction to the materials and methods of studying epigraphical texts; individual assignments in editing epigraphical fragments. Tracy.

Au Qtr.

860† Greek Palaeography G 3

Vaughn.

Wi Qtr. 3 cl. Prereq: Advanced reading ability in Greek and permission of instructor.

861† Textual Criticism G 3

Vaughn.

Sp Qtr. 3 cl. Prereq: 860.

Medieval and Renaissance Culture

See Medvl and Renais S 888.

Medieval and Renaissance Literature

See Medvl and Renais S 889.

894† Group Studies G 1-6

Su, Wi Qtrs. Repeatable to a maximum of 20 cr hrs.

993 Individual Studies G 1-4

Assigned readings; individual research in disciplines such as epigraphy, topography, papyrology, linguistics, etc.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 20 cr hrs.

995 Seminar G 5

The seminar will normally consist of a two-term sequence (A-W, W-Sp); an intensive study of an author or a genre, e.g., Aeschylus, Thucydides, Hellenistic poetry. Topic for 1977-78: Aeschylus. Amaral.

Wi Qtr. Repeatable to a maximum of 20 cr hrs. Credit in this course will be granted only with the completion of 996.

996 Seminar G 5

Continuation of 995. Amaral.

Sp Qtr. Prereq: 995. Repeatable to a maximum of 20 cr hrs.

999 Research G Arr

Research for thesis and dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Health Education

Office: 215 Pomerene Hall, 1760 Neil Avenue,
424-2078

101 Special Topics in Health and Survival U 1

Concentrated courses on specific health-related topics of interest and concern to students for survival and life-planning.

Au, Wi, Sp Qtrs. Arr. Repeatable (according to topic) to 10 cr hrs. Not open to majors or minors in hlth edu, phys ed, or dent hyg. Concurrent courses allowed; not a substitute for 103 or 200.

102 First Aid U 2

A consideration of first aid practices to the injured; designed to lead to Red Cross certification in first aid.

Su, Au, Wi, Sp Qtrs. 2 cl, lab.

103 Critical Issues for College Students U 3

A study of student health problems; designed to foster understandings and attitudes needed for intelligent decision-making related to present and future health needs.

Au, Wi, Sp Qtrs. 3 cl. Not open to students with credit for 200.

122 Techniques in Cardiopulmonary Resuscitation U 1

Development of skills and competency in recognizing and reacting to situations requiring cardiopulmonary resuscitation measures; completion leads to certification in CPR by American Red Cross.

Au, Wi, Sp Qtrs. 1 cl.

200 Health and Behavior U 5

Designed to establish a basis for positive health and efficiency through a consideration of various conditions and factors which affect health.

Su, Au, Wi, Sp Qtrs. 5 cl. Not open to students with

credit for 103. Open only to students in dent hyg ed, hlth edu, phys ed, and pub recreation curricula, or by written permission of instructor.

201 Current Concepts in Community Health U 3

A study of community health programs, the need for them, the problems and issues involved, and how these problems can be solved.

Au, Wi, Sp Qtrs. 3 cl.

204 Sexuality and Health U 3

The study of sexuality as an aspect of the healthy individual; the demythologizing of sexual beliefs and behaviors; sexual behavior and attitudes in young adults.

Su, Au, Wi, Sp Qtrs. 3 cl, or 1 2½-hr cl. Not open to hlth edu major students.

289 Seminar and Field Experience in Health Education U 2-5

Professional service in a school or community agency and seminar to discuss and analyze constructive experiences.

Au, Wi, Sp Qtrs. For students in hlth edu curriculum. Repeatable to a maximum of 5 cr hrs.

300 Health Education for Elementary Teachers U 3

The teacher's responsibility for health of school child; screening, referral, vision and hearing, nutritional problems, instructional programs, emergency care, teacher's health.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 103 and Psych 230; admission to College of Education. Not open to undergrad minors or majors in phys ed or hlth edu.

301 Health Education for Secondary Teachers U 3

A study of health problems as they relate to the individual secondary school students; emphasis on the role of the teacher in the secondary school health program.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Psych 230. Not open to students preparing for secondary school teaching of hlth edu or phys ed.

402 Safety Education U 3

The study of epidemiology of accidents, development of preventive programs and safety consciousness; the teaching of first aid to meet Red Cross instructor's certification.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 102 and permission of instructor.

501 The School Health Program U 3

A consideration of the total school health program, including healthful school living, health services, and the teaching of health.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 200. For phys ed students not in hlth edu major or minor.

587 Student Teaching in Secondary Schools U 3-15

Observation, participation, and responsible teaching in a public school in the greater Columbus area; individual and group conferences or seminars.

Au, Wi, Sp Qtrs. Prereq: 4th yr standing. Repeatable to the required 15 cr hrs. For additional information, see College of Education bulletin.

602 Personal Health Problems U G 3

An advanced study of personal health problems; extensive reading and reporting in selected health areas.

Su, Au, Wi Qtrs. 3 cl.

603 Current Progress in Disease Control U G 2

Authorities in medicine and health sciences will interpret how current findings may affect disease prevention and control; newer knowledge of cancer, dental caries, etc., will be discussed.

Sp Qtr. 2 cl. Prereq: 4th yr or grad standing in a health science area.

604 Education for Human Sexuality U G 3

Review of current information on health and sexuality by educators and school personnel; consideration of the sex education curriculum, teaching methods, materials, and controversial issues.

Su, Au, Sp Qtrs. 3 cl. Prereq: 200, 622 or equiv, Sociol 330, or permission of instructor.

605 Health Counseling U G 3

To provide educators and counselors opportunity to develop skills and knowledge to advise students and clients confronted with personal health concerns.

Wi Qtr. 2 1½-hr cl. Prereq: 5 hrs of psych; admission to College of Education.

621 School Health Services U G 3

Consideration of healthful school living and health services, including health appraisal, counseling, educational adjustments, communicable diseases, and emergency programs.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 200 or equiv.

622 The Teaching of Health U G 5

Principles, methods, materials, and resources involved in teaching health; direct, correlated, and integrated curriculum patterns; individual teaching experience.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 621. Not open to students with credit for 610.

623 Organizational Relationships in School Health Education U G 3

The relation of the school health program to the total community health program; official and non-official health agencies are studied.

Su, Wi, Sp Qtrs. 3 cl. Prereq: 622. Not open to students with credit for 620.

692 Workshop U G 1-8

Intensive study of a health education topic of interest to the participants for the purpose of developing sound principles and practice relating to it.

Su, Au, Wi, Sp Qtrs. Cl hrs arr. Prereq: Teaching experience and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs.

693 Individual Studies U G 1-4

Investigation of selected professional problems.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr or grad standing and permission of adviser.

694 Group Studies in Health Education U G 1-5

Group studies on special topics and proposed courses in health education.

Su, Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: Advanced standing in professional hlth edu program or written permission of instructor. Repeatable to a maximum of 20 cr hrs.

701† Comparative Study of World Health Problems U G 3

A study of world health problems, their influences on all people, the variety and magnitude of problems, and the methods being used to solve them.

Wi Qtr. 3 cl. Prereq: 103, or equiv.

702 Health After 60 U G 3

Designed to develop an awareness of the health concerns of the elderly and a willingness to help improve their quality of life.

Sp Qtr. 1 3-hr cl. Prereq: 4th yr standing in a health science or behavioral science area or permission of instructor.

788 Practicum for School Nurses U G 3-15

A supervised opportunity is provided to practice the school nursing specialty in a public school health services setting.

Au, Wi, Sp Qtrs. 1 conf per wk; hrs of field exp varies with cr hrs. Prereq: Written permission of area advisor. Limited to student nurses and RN's with courses req'd for school nurse certification. Repeatable to a maximum of 15 cr hrs.

789 Practicum in Health Education U G 2-15

Opportunity is provided for putting educational research and theory into practice by teaching, administration, and agency experience under supervision in university, school, and agency situations.

Su, Au, Wi, Sp Qtrs. 1 arr conf and arr field exp. Prereq: Written permission of instructor and departmental advisor based upon submitted evidence of appropriate knowledge and skill in the selected course. Repeatable to a maximum of 15 cr. hrs.

801 Professional Preparation of Health Educators G 3

Review and development of standards, guidelines, and evaluation of programs preparing health educators; innovative and future expectations for the profession are explored.

Sp Qtr. 3 1-hr cl or 2 1½-hr cl.

821 Survey of Research in Health Education G 3

Through study and review of research literature in health education, the professional in education will analyze and synthesize existing and needed areas and topics for research.

Au Qtr. 1 3-hr lecture or 2 1½-hr sessions. Prereq: MSc or MA degree in hlth edu or allied field; advanced grad standing.

822 Curriculum in Health Education G 3

A review and study of concepts and practices in school health curricula and development of current and proposed curriculum models and designs.

Wi Qtr. 1 3-hr lecture or 2 1½-hr sessions. Prereq: MSc or MA degree in hlth edu or allied field; advanced grad standing.

823 Evaluation in Health Education G 3

Identification and application of various techniques for evaluating, learning, processes, and programs in health education.

Sp Qtr. 1 3-hr lecture or 2 1½-hr sessions. Prereq: MSc or MA degree in hlth edu or allied field; advanced grad standing.

894 Group Studies in Health Education G 1-5

Advanced studies in special problems and issues in health education.

Au, Wi, Sp Qtrs.

995 Seminar in School Health Education G 2

Au Qtr. 2 cl.

999 Research G Arr

Research for thesis and dissertation purposes only.
Su, Au, Wi, Sp Qtrs.

Hebrew

Office: 256 Dieter Cunz Hall of Languages, 1841
Millikin Road, 422-9255

101 Elementary Hebrew U 5

Conversation, reading, writing, vocabulary building, phonetics, and grammar.

Au, Wi, Sp Qtrs. 5 cl.

102 Elementary Hebrew U 5

Reading of modified passages from modern Hebrew literature supplemented with additional study of grammar.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 101.

103 Intermediate Hebrew U 5

Reading of passages from various periods of Hebrew literature; review of salient points of elementary grammar and introduction to elements of classical Hebrew.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 102 or 110.

104 Intermediate Hebrew U 5

Reading of modern Hebrew short stories, poems, and essays; special emphasis on oral practice and Hebrew idioms.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 103 or 112.

110 Intensive Elementary Hebrew U 5, 10

Elementary Hebrew for students wishing to acquire the basic language skills in one quarter; intensive drill in form, syntax, vocabulary, and idiom; equivalent to 101 and 102.

Sp Qtr. 10 cl. Prereq: Permission of dept. Not open to students with credit for 102. Students with credit for 101 or equiv. may not register for more than 5 cr hrs.

112 Intensive Modern Hebrew U 5, 10, 15

Su Qtr. 15 cl. Enrollment limited to 25 students. Prereq: Permission of chairman. Full time of student and full fees required. Equiv of 101, 102, 103. Students with credit for 101 or the equiv may not register for more than 10 hrs. Students with credit for 101 and 102 or the equiv may not register for more than 5 hrs. Students with credit for 103 or the equiv may not register for credit. No audit.

241 The Culture of Contemporary Israel U 5

Survey and analysis of the socio-cultural phenomena and problems in modern day Israel; taught in English.

Au, Wi, Sp Qtrs. 5 cl.

271 Modern Hebrew Literature in Translation U 5

Modern Hebrew literature; works of major writers from the middle of the 18th century to the present; emphasis on European literary influences.

Au, Wi Qtrs. 5 cl. Prereq: English 110 or equiv.

272†* Medieval Hebrew Literature in Translation U 3

Post-biblical and medieval Hebrew literature from the Near East, North Africa, and Europe. Ahroni.

Wi Qtr. 3 cl. Prereq: English 110 or equiv.

273 Ancient Hebrew Literature in Translation U 5

The Hebrew Bible and its connections with ancient near eastern literatures and Hebrew midrashic literature.

Au, Wi, Sp Qtrs. 5 cl. Prereq: English 110 or equiv.

274 Women in Ancient Hebrew Literature U 3

An examination of the social, legal, and religious position of women as they appear in ancient Hebrew literature. Taught in English.

Au, Wi, Sp Qtrs. 3 cl. Prereq: English 110.

293 Individual Studies U 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 cr hrs.

294 Group Studies U 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 cr hrs.

401 Review Grammar and Composition U 5

Review of Hebrew grammar; composition on assigned topics and some practice in translation. Salczer.

Wi Qtr. 5 cl. Prereq: 104.

402 Intermediate Hebrew Conversation and Composition U 5

Vocabulary building, practice in speaking Hebrew, conversation and composition dealing with social and everyday aspects of Israeli life. Salczer.

Sp Qtr. 5 cl. Prereq: 401 or permission of instructor.

403 Hebrew Syntax U 3

Parts of speech, types of sentences, word order, and syntactic analysis. Hayon.

Au Qtr. 3 cl. Prereq: 402 or permission of instructor.

421 The Modern Hebrew Short Story U 3

Reading and discussion of masterpieces of modern Hebrew short stories in the 19th and 20th centuries. Ahroni.

Wi Qtr. 3 cl. Prereq: 104.

422 Modern Hebrew Poetry U 3

Reading and discussion of masterpieces of modern Hebrew poetry in the 19th and 20th centuries. Ahroni.

Sp Qtr. 3 cl. Prereq: 421 or permission of instructor.

425 Readings in the Mishnah U 3

Reading and discussion of the ideas and teachings of the Mishnah as they are reflected in the unique Mishnaic language. Salczer.

Au Qtr. 3 cl. Prereq: 401 or equiv.

604 Hebrew Phonetics and Vocalization U G 3

Rules of Hebrew phonetics and vocalization; lectures and abundant practical exercises. Hayon.

Wi Qtr. 3 cl. Prereq: 104 or permission of instructor.

605 Hebrew Morphology U G 5

The morphological system of Hebrew; the interrelations between roots and forms. Hayon.

Sp Qtr. 5 cl. Prereq: 604 or permission of instructor.

611 Introduction to the History of the Hebrew Language U G 3

Genealogical and typological relations within the Semitic family, a survey of Biblical, Mishnaic, and modern Hebrew. Salczer.

Sp Qtrs. 3 cl. Prereq: 104 or permission of instructor.

621 The Bible as Literature: Selected Readings U G 3

Ahroni.

Au Qtr. 3 cl. Prereq: 421 or 422 or 423.

623†* Medieval Hebrew Poetry: Secular and Liturgical U G 3

The poetry of Samuel Ha-Nagid, ibn Gabirol, Moses Ibn Ezra, and Yehuda Ha-Levi, and selections from the *Maqamas* of Al-Harizi, Zabara, Ibn Hasday, and Emmanuel Ha-Romi. Ahroni.

Wi Qtr. 3 cl. Prereq: 421 or 422 or 423.

624†* Hebrew Literature of Early Modern Times: from Haskala Period until 1900 U G 3

Literature works of the Haskala period and of the 19th century. Ahroni.

Au Qtr. 3 cl. Prereq: 421 or 422 or 423.

625†* Readings in H.N. Bialik U G 3

Poetry and prose of H. N. Bialik. Ahroni.

Sp Qtr. 3 cl. Prereq: 421 or 422 or 423.

693 Individual Studies U G 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

694 Group Studies U G 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr. hrs.

H783 Honors Course U 3-5

Offers graduates with special aptitudes a greater opportunity to do independent study than is possible in the ordinary course; work in conference, library, or phonetics laboratory.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the Hebrew courses and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Repeatable to a maximum of 15 cr hrs.

100.02 Western Civilization from the Mid-17th Century

Western civilization from 1650 to the present; colonization; political, scientific and industrial revolutions; nationalism and democracy; the two World Wars; dissolution of Empires.

Wi Qtr. 5 cl.

110 Ancient and Medieval History U 5**110.01 The Greco-Roman World**

Development of classical Greek civilization; the decline of the polis, the Hellenistic age; the rise of the Roman state; the Roman Empire and Greco-Roman civilization. Balcer and Gregory.

Au, Wi, Sp Qtrs. 5 cl.

110.02 Medieval Europe

Medieval civilization in its social, economic, political, and cultural setting; the significance of the medieval world for the modern world and Euro-American society. Lynch and Pegues.

Su, Au, Wi Qtrs. 5 cl.

110.03† Byzantine Civilization

The culture and civilization of medieval Constantinople as expressed in political and religious ceremony, ideology, everyday life, and art. Gregory.

5 cl.

120 Modern Europe U 5

Su, Au, Wi, Sp Qtrs. 5 cl.

120.01 European Civilization, 1500-1789

An introduction to the political, social, diplomatic, economic, and intellectual history of Europe from 1500 to the outbreak of the French Revolution.

H120.01 (honors) may be available to students enrolled in an honors program or by permission of dept. Not open to students with credit for 101 or 121.

120.02 European Civilization, 1789-1914

An introduction to the political, social, diplomatic, economic, and intellectual history of Europe from the French Revolution to the outbreak of the First World War.

H120.02 (honors) may be available to students enrolled in an honors program or by permission of dept. Not open to students with credit for 102 or 122.

120.03 European Civilization, 1914 to Present

An introduction to the political, social, diplomatic, economic, and intellectual history of Europe from the outbreak of World War I to the present.

H120.03 (honors) may be available to students enrolled in an honors program or by permission of dept. Not open to students with credit for 123 or 215.

150 The Americas U 5

Su, Au, Wi, Sp Qtrs. 5 cl.

150.01 History of the United States, 1763-1877

The general political, constitutional, and economic development of the United States from the beginning of the Revolutionary era to the end of the Civil War.

H150.01 (honors) may be available to students enrolled in an honors program or by permission of dept. Not open to students with credit for 103, 121, 122, or 230.

150.02 History of the United States, 1877 to Present

A continuation of 150.01; the two provide a sequence but either may be taken independently as an elective.

H150.02 (honors) may be available to students enrolled in an honors program or by permission of dept. Not open to students with credit for 104, 122, 123 or 230.

History

Office: 106 Dulles Hall, 230 West 17th Avenue, 422-2674

100 Western Civilization U 5**100.01 Western Civilization to the Mid-17th Century**

The history of Western civilization from classical Greece to the mid-seventeenth century A.D.; ancient civilizations; barbarian invasions; medieval institutions; Renaissance and Reformation and parliamentary institutions.

Au Qtr. 5 cl.

180 Thematic Courses U 5**180.01 Technological Revolutions and Their Consequences**

Human, cultural, philosophic impact and significance of technological revolutions; analysis of representative turning points in technology affecting technical creativity and its inter-relation with human values. Smith.

Au Qtr. 5 cl.

180.02 History of Scientific Revolutions

Models of scientific innovation and study of selected examples of the great scientific revolutions: Copernican, Chemical, Darwinian, Quantum, Genetic, and others. Burnham and Fullmer.

Sp Qtrs. 5 cl.

180.03 The Indian in American Civilization

American Indian-white relations from colonial times to the present, focusing on changing conceptions of "civilization", formation and implementation of policies, varying Indian responses to policies. Blackford.

Au Qtr. 5 cl.

180.04 History of Mexican Civilization

Mexican history and culture during pre-Hispanic (Mayas and Aztecs) colonial and independence periods; topics include Indians, colonialism, imperialism, religion, foreign affairs and Chicanos. Cooper.

Au Qtr. 5 cl.

211 Great Figures of Modern Europe U 5

Study of modern European history through an examination of the lives and times of great figures. Snider.

Su Qtr. 5 cl.

212 Great Figures in British History U 5

British history since 1485 as illustrated in the lives of notable figures. Roberts.

Sp Qtr. 5 cl.

213† History of the Medieval Church U 5

The rise of the Christian church and the papacy; the Church Fathers; investiture controversy; heresy and monasticism; mysticism; the crisis of the late medieval church. Lynch and Pegues.

5 cl.

214 History of the Early Church to A.D. 400 U 5

The origin and growth of the apostolic church; church, society, and state in the second and third centuries; the Christian Roman Empire; readings in sources. Lynch.

Wi Qtr. 5 cl.

215 Contemporary Europe, 1914 to Present U 5

World War I; political, social, and economic developments of the interwar period; Communism, Nazism; World War II; Europe between East and West; moves toward unification. Dorpalen.

Au Qtr. 5 cl. Not open to students with credit for 120.03.

218† Great Figures in Modern European Thought U 5

Main currents in intellectual history from the 17th through the 20th centuries as reflected in the works of individual philosophers, writers, historians, and social theorists.

Sp Qtr. 5 cl. Not open to students with credit for 218.02.

220 Russian Civilization U 5

A survey of Russian civilization from earliest times to 1917; geography, peoples, culture, social, political and religious institutions, and the impact of Westernization. Curran and Morley.

Au, Sp Qtrs. 5 cl.

231 Great Figures in American History U 3

Main trends of American development through the medium of biography; historical background, comparison and contrast of leading figures, and analysis of motivation and character. Bowers, Coles, and Van Tine.

Au, Wi Qtrs. 3 cl.

240 Modern Latin America U 5

Survey of Latin American history since 1800; emphasis on 20th century Mexico, Brazil, Argentina and Cuba. Cooper.

Wi Qtr. 5 cl.

251 Jewish History I U 5

Jewry and Judaism from remote antiquity to the 15th century A.D. Chazan and Raphael.

Au Qtr. 5 cl. Either 251 or 252 may be taken independently.

252 Jewish History II U 5

Jewry and Judaism from the 15th century to the present. Chazan and Raphael.

Wi Qtr. 5 cl. Either 251 or 252 may be taken independently.

254† The Holocaust: Destruction of European Jewry (1933-1945) U 5

The historical background of the holocaust; dimensions of destruction; world response; post war trials; moral and philosophical issues. Chazan and Raphael.

Sp Qtr. 5 cl.

255 Islamic History and Civilization I U 5

Survey of Islamic history and civilization from the rise of Islam to the 16th century: prophetic community, cosmopolitan empire, separatism, nomadic invasions, regional empires' origins. Findley and Waldman.

Wi Qtr. 5 cl.

256 Islamic History and Civilization II U 5

A survey of Islamic history and civilization from the 16th century to the present: regional empires, disintegration, European imperialization, nationalism, independence, modernization. Findley and Waldman.

Sp Qtr. 5 cl.

257† History of Islamic Culture in Africa U 5

Survey of history and role of Islam in the African continent, analyzed in African and Islamic contexts, emphasizing Islam's impact on indigenous culture. Waldman.

Au, Sp Qtrs. 5 cl.

260 Afro-American History U 5

Afro-Americans in North America from the 16th century to the present. Hamilton.

Au, Sp Qtrs. 5 cl.

263 Civilization of India U 5**263.01† Civilization of Ancient and Medieval India**

An introduction to the social and cultural history of ancient and medieval India. Dale.

Au Qtr. 5 cl.

263.02 Civilization of Modern India

A survey of Indian history from the first European contact in the 15th century to the independence of India and Pakistan in 1947. Dale.

Wi Qtr. 5 cl.

265 History of East Asia to 1800 U 5

East Asian civilization from the earliest time to 1800: Confucianism, Buddhism, Taoism; the Chinese high culture; the regional variations—Japan, Korea, and Vietnam. Bartholomew, Chang, and Chu.

Au Qtr. 5 cl. Not open to students with credit for 644.

266 History of East Asia since 1800 U 5

The modernization of East Asia: the impact of the West; the response of the traditional societies; nationalism, fascism, communism. Bartholomew, Chang, and Chu.

Wi Qtr. 5 cl. Not open to students with credit for 645.

267 History of The People's Republic of China U 5

Origins of the Chinese revolution and the rise of Mao; problems of political consolidation and social transformation. Chu.

Sp Qtr. 5 cl.

270 History of Religions U 5

An introduction to the study of religious phenomena, with special attention to primitive religious thought; four major world religions. Raphael and Waldman.

Au Qtr. 5 cl.

280 The City: Ancient and Medieval U 5

Cross-cultural study of the origins and development of the city from the beginning of civilization through the Middle Ages. Gregory.

Wi Qtr. 5 cl.

281 Perceptions and Roles of Women in the West from the Greeks through the 16th Century U 5

The social and legal position of women; how attitudes toward women have both defined and contrasted with women's actual roles. Hamilton and Rupp.

Au Qtr. 5 cl.

282 Perceptions and Roles of Women in the West, 17th Century to Present U 5

A continuation of 281. Hamilton and Rupp.

Wi Qtr. 5 cl.

285 Great Issues in American Constitutional History U 3

A study of selected issues that have influenced the development of the federal constitution. Benedict and Chapin.

Au Qtr. 3 cl.

290† Survey of American Intellectual History U 5

American thought from colonial times to the present with emphasis on the relation between dominant ideas and the behavior and beliefs of the population. Hoffer.

Sp Qtr. 5 cl. Not open to students with credit for 690.01

294 Special Topics in History U 3-5

Groups of students are given an opportunity to pursue special studies not otherwise offered.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr. hrs.

301† Major Influences in the History of Western Civilization U 3

Offered by senior members of the staff and designed to acquaint the student with problems in the interpretation of the history of western civilization.

Sp Qtr. 2 cl.

302 The Historian's Craft U 5

Problems and practice in historical research, analysis, and presentation. Waldman.

Wi Qtr. 5 cl.

526 Civilization of Central Europe, 1400-1740 U G 5

Political, social, and cultural trends in central Europe prior to the formation of the Habsburg Monarchy. Snider.

Sp Qtr. 5 cl.

527 Social and Economic History of Europe, 1500-1700 U G 5

Selected topics in European economic and social development from the Reformation to the eve of the Industrial Revolution. Snider.

Wi Qtr. 5 cl.

550† Population in History U G 5

An introductory survey of the history of human population and of interrelationships between historic, sociological, psychological, and intellectual developments and changes in population patterns. Rothney.

Sp Qtr. 5 cl.

563† United States in the 19th Century, 1865-1900 U G 5

An intensive study of the political, social, and cultural transformation of the United States in the late 19th century. Van Tine.

Sp Qtr. 5 cl. Not open to students with credit for 664.

564 Businessmen in American Life since 1870 U G 5

The strategy and structure of American business expansion since 1870; the roles businessmen have played in society and politics. Blackford.

Au Qtr. 5 cl.

565 United States in the 20th Century, 1900-1933 U G 5

An intensive study of the United States during the progressive era and after, the adjustment of institutions to industrialism. Kerr and Reichard.

Au Qtr. 5 cl.

566 United States in the 20th Century, 1933 to Present U G 5

An intensive study of contemporary America in depression, war, and prosperity. Kerr and Reichard.

Wi, Sp Qtrs. 5 cl.

581 Women in Social Movements in Europe and America U 5

The roles of women in social reform movements, particularly feminist movements, during the 19th and 20th centuries. Hamilton and Rupp.

Sp Qtr. 5 cl.

598 Senior Colloquium U 5

The nature of historical judgment and interpretation; the roles of evidence, approach and presuppositions. Su, Au, Wi, Sp Qtrs. 12-hr cl. Prereq: Sr history majors or written permission of instructor.

H599 Honors Proseminar in History U 3

Designed to give undergrad experience in historical research and analysis of historical problems.

Au, Wi, Sp Qtrs. 1 cl. Prereq: 15 cr hrs of 100-200 level history courses with an average of 3.2 or better. Students may not register for more than 2 decimal subdivisions below in any one quarter; no more than 15 cr hrs may be counted toward graduation; no more than 9 cr hrs may be counted toward the major in history. Repeatable to a maximum of 15 cr hrs.

H599.01 United States History

H599.02 West European History

H599.03 East European History

H599.04 Asian History

H599.05 Other Areas

General Prerequisites for Courses Numbered 600 and 700

Unless otherwise indicated the prerequisites for 600 and 700-level courses are four quarter courses in the

HISTORY 600

CHANGE title to: The Ancient Near East
CHANGE desc to: The ancient history of Mesopotamia; Egypt, Anatolia, Persia, Israel, and the Levant to the establishment of the Persian Empire; readings from sources in translation.

601 Greek History U G 5**601.01 History of Archaic Greece**

History of Greece from the early Stone Age communities to the end of the Greek-Persian conflicts, 479 B.C.; readings in the sources in translation. Balcer.

Au Qtr. 5 cl. Not open to students with credit for 601.

601.02 History of Classical Greece

History of classical Greece from the foundation of the Delian Confederacy to the death of Alexander III; reading in the sources in translation. Balcer.

Wi Qtr. 5 cl.

601.03+ History of the Eastern Mediterranean during the Bronze Age

Studies in the civilizations of Minoan Crete and Helladic/Mycenaean Greece in relationship with the

HISTORY 602

CHANGE title to: The Hellenistic Near East
CHANGE desc to: The cultural history of the Achaemenid and Hellenistic kingdoms from c. 600 to 31 B.C., with emphasis upon Greek and Persian interaction in the Near East.

Roman Republic; readings in ancient sources in translation. Gregory.

Au Qtr. 5 cl. Not open to students with credit for 603.

603.02+ Early Roman Empire, 27 B.C.-A.D. 235 U G 5

History of the early Roman Empire, Augustus to the beginning of the military anarchy of third century; problems of imperial politics and administration; sources in translation. Gregory.

Wi Qtr. 5 cl. Not open to students with credit for 604.

603.03+ Late Roman Empire, A.D. 235-476 U G 3

General history of the decline of the Western Roman Empire; the emergence of the Germanic kingdoms; particular problems which characterized the decline; reading in some sources. Gregory.

Sp Qtr. 3 cl. Prereq: 603.02 recommended.

605 Jewish History U G 3**605.01 Second Commonwealth**

The restoration of Jewish statehood following the first Babylonian Exile and the history of Palestinian Jewry and of the Jewish Diaspora down to the 2nd century A.D. Raphael.

Su Qtr. 3 cl. Not open to students with credit for 715.

605.02+ Jewish Community under Medieval Christianity

The legal, social, economic, and cultural position of the Jews in the Late Roman Empire and in Western Europe from the 4th century A.D. to 1500. Chazan.

Wi Qtr. 3 cl. Not open to students with credit for 716.

605.03 Jewry and Judaism in the Orbit of Islam

History of the Jews in the Near East and North Africa from the Arab conquests to about 1500. Chazan.

Au Qtr. 3 cl. Not open to students with credit for 717.

605.04 Jewry and Judaism in the Orbit of Christianity

The legal, social, economic, and cultural position of the Jews in the Late Roman Empire and in Western Europe from the 4th century A.D. to 1500. Chazan.

Wi Qtr. 3 cl. Not open to students with credit for 716.

605.05+ Jewish Settlement in Palestine from the Ottoman Conquest to Modern Times

The flourishing Palestinian Jewish Center in the 16th century; Jewish immigration to Palestine; rise of modern Zionism; the British Mandate, and the State of Israel. Chazan and Raphael.

Au Qtr. 3 cl. Not open to students with credit for 719.

605.06 History of Ancient Israel

The rise of the Jewish nation and religion in the Ancient Near East; settlement in Canaan; the Israelite and Judean monarchies until their conquest by Assyria and Babylonia. Raphael.

Au Qtr. 3 cl. Not open to students with credit for 720.

605.07 World of the Talmud

The development of Jewish law and institutions in Palestine and Babylonia after the destruction of the Second Commonwealth; Rabbinic Judaism and self-government. Chazan and

open to students with credit for 721.

605.08 Jewry in the Mediterranean World

Jewish communities: their origin within medieval Polish society; institutions of Polish and Lithuanian Jewry; the "Jewish Question" in Tsarist Russia. Chazan.

Sp Qtr. 3 cl. Not open to students with credit for 723.

605.09 Jewry in Eastern Europe

Jewish communities: their origin within medieval Polish society; institutions of Polish and Lithuanian Jewry; the "Jewish Question" in Tsarist Russia. Chazan.

Sp Qtr. 3 cl. Not open to students with credit for 723.

605.10+ Messianic and Sectarian Movements in Jewry

The history, doctrines, and polemics of the secessionist groups in medieval Jewry from the 7th to the 18th centuries. Chazan and Raphael.

Sp Qtr. 3 cl. Not open to students with credit for 724.

598 Senior Colloquium U 5

The nature of historical judgment and interpretation: the roles of evidence, approach and presuppositions. Su, Au, Wi, Sp Qtrs. 12-hr cl. Prereq: Sr history majors or written permission of instructor.

H599 Honors Proseminar in History U 3

Designed to give undergrad experience in historical research and analysis of historical problems.

Au, Wi, Sp Qtrs. 1 cl. Prereq: 15 cr hrs of 100-200 level history courses with an average of 3.2 or better. Students may not register for more than 2 decimal subdivisions below in any one quarter; no more than 15 cr hrs may be counted toward graduation; no more than 9 cr hrs may be counted toward the major in history. Repeatable to a maximum of 15 cr hrs.

H599.01 United States History**H599.02 West European History****H599.03 East European History****H599.04 Asian History****H599.05 Other Areas****General Prerequisites for Courses Numbered 600 and 700**

Unless otherwise indicated the prerequisites for 600 and 700-level courses are four quarter courses in the

603.03† Late Roman Empire, A.D.**235-476 U G 3**

General history of the decline of the Western Roman Empire; the emergence of the Germanic kingdoms; particular problems which characterized the decline; reading in some sources. Gregory.

Sp Qtr. 3 cl. Prereq: 603.02 recommended.

605 Jewish History U G 3**605.01 Second Commonwealth**

The restoration of Jewish statehood following the first Babylonian Exile and the history of Palestinian Jewry and of the Jewish Diaspora down to the 2nd century A.D. Raphael.

Su Qtr. 3 cl. Not open to students with credit for 715.

605.02† Jewish Community under Medieval Christianity

The legal, social, economic, and cultural position of the Jews in the Late Roman Empire and in Western Europe from the 4th century A.D. to 1500. Chazan.

Wi Qtr. 3 cl. Not open to students with credit for 716.

605.03 Jewry and Judaism in the Orbit of Islam

History of the Jews in the Near East and North Africa from the Arab conquests to about 1500. Chazan.

Au Qtr. 3 cl. Not open to students with credit for 717.

605.04† Jews in the Western World in Modern times

Changing patterns of Jewish life since the Jews' struggle for Emancipation; migration movements and the shift of Jewish centers in Europe and the New World. Chazan.

3 cl. Not open to students with credit for 718.

605.05† Jewish Settlement in Palestine from the Ottoman Conquest to Modern Times

The flourishing Palestinian Jewish Center in the 16th century; Jewish immigration to Palestine; rise of modern Zionism; the British Mandate, and the State of Israel. Chazan and Raphael.

Au Qtr. 3 cl. Not open to students with credit for 719.

605.06 History of Ancient Israel

The rise of the Jewish nation and religion in the Ancient Near East; settlement in Canaan; the Israelite and Judean monarchies until their conquest by Assyria and Babylonia. Raphael.

Au Qtr. 3 cl. Not open to students with credit for 720.

605.07 World of the Talmud

The development of Jewish law and institutions in Palestine and Babylonia after the destruction of the Second Commonwealth; Rabbinic Judaism and diasporic Jewish self-government. Chazan and Raphael.

Sp Qtr. 3 cl. Not open to students with credit for 721.

605.08† Jews in the Mediterranean World

East Mediterranean Jewry under the Byzantine Empire, its successor states, and under the Ottoman Turks; the Jews in Italy; rise and fall of Spanish Jewry. Chazan.

Au Qtr. 3 cl. Not open to students with credit for 722.

605.09† Jews in Eastern Europe

East European Jewish communities: their origin and function within medieval Polish society; self-governing institutions of Polish and Lithuanian Jewry; the "Jewish Question" in Tsarist Russia. Chazan.

Sp Qtr. 3 cl. Not open to students with credit for 723.

605.10† Messianic and Sectarian Movements in Jewry

The history, doctrines, and polemics of the secessionist groups in medieval Jewry from the 7th to the 18th centuries. Chazan and Raphael.

Sp Qtr. 3 cl. Not open to students with credit for 724.

601 Greek History U G 5**601.01 History of Archaic Greece**

History of Greece from the early Stone Age communities to the end of the Greek-Persian conflicts, 479 B.C.; readings in the sources in translation. Balcer.

Au Qtr. 5 cl. Not open to students with credit for 601.

601.02 History of Classical Greece

History of classical Greece from the foundation of the Delian Confederacy to the death of Alexander III; reading in the sources in translation. Balcer.

Wi Qtr. 5 cl.

601.03† History of the Eastern Mediterranean during the Bronze Age

Studies in the civilizations of Minoan Crete and Helladic/Mycenaean Greece in relationship with the

HISTORY 60

CHANGE title

CHANGE desc

Achaemenid a

31 B.C., wit

interaction

Roman Reput
translation. Gr

Au Qtr. 5 cl. Not open to students with credit for 603.

603.02† Early Roman Empire, 27 B.C.-A.D. 235 U G 5

History of the early Roman Empire, Augustus to the beginning of the military anarchy of third century; problems of imperial politics and administration; sources in translation. Gregory.

Wi Qtr. 5 cl. Not open to students with credit for 604.

HISTORY 605.06

CHANGE cr hrs to: 05
CHANGE cl to: 5 cl.

HISTORY 625.01

CHANGE title to: History of European Warfare from
the Renaissance to 1870
CHANGE desc to: An Analysis of military affairs and
of their interaction with political and diplomatic
history.

HISTORY 625.02

CHANGE title to: History of European Warfare from
1870 through the Second World War
CHANGE desc to: A continuation of 625.01: an
analysis of the military and diplomatic events
which shaped the world in the 20th century.

605.11† Jews in America

The rise and development of the American Jewish community from colonial times to the present. Raphael.

Sp Qtr. 3 cl. Not open to students with credit for 725.

605.12† Jewish Historians and Historiography

A study of the major Jewish historians, their lives and writings, and an introduction to various philosophies of Jewish history. Raphael.

Sp Qtr. 3 cl.

606 Medieval History U G 5**606.01 Medieval Civilization**

The decline of the Roman Empire; the rise of Christianity; analysis of feudalism and manorialism; the Great Economic Revival, and the origins of Western society. Pegues.

Su Qtr. 5 cl. Not open to students with credit for 606.

606.02 Medieval Social and Economic History to 1200

A treatment of the Germanic invasions, manorialism, feudalism, urban life, commerce, and popular heresy from the late Roman Empire to the 13th century. Lynch.

Sp Qtr. 5 cl.

606.03† Medieval Intellectual History

Intellectual life from the late Roman Empire to the 14th century; concentration on the ancient heritage; medieval "Renaissances"; schools; books; universities; literary genres; scholasticism; rise of humanism. Lynch.

Sp Qtr. 5 cl.

607 Byzantine History U G 5**607.01 Byzantine Empire I**

History of Byzantium, A.D. 330-843, with emphasis on internal political and religious developments and the relationship between Byzantium and its neighbors. Gregory.

Au Qtr. 5 cl.

607.02 Byzantine Empire II

History of Byzantium, A.D. 843-1453, with emphasis on internal developments, the Crusades, the Fall of the City, and the legacy of Byzantium. Gregory.

Wi Qtr. 5 cl.

609 The Renaissance U G 5

The literary, artistic, and intellectual achievements primarily of Renaissance Italy against the economic, political, and social developments in western Europe. Kittelson and Pegues.

Wi Qtr. 5 cl.

610 The Reformation U G 5

The rise and growth of Protestantism and the Catholic reformation of the 16th century against the economic, political, and social developments in western Europe. Kittelson.

Sp Qtr. 5 cl.

History of Biology

See Botany 601.

612† Europe, 1600-1775 U G 5

A study of the rise of the absolute state, the changing diplomatic alignments, and the Enlightenment. Rule.

Su Qtr. 5 cl.

613† French Revolution and Napoleon U G 5

The background of the Revolution; the social bases and political schisms of the first three Revolutionary

governments, 1789-1795; the program and role of Napoleon. Rule.

Wi Qtr. 5 cl.

614 Europe, 1815-1914 U G 5

Nationalism, the democratic movement, economic growth, imperialism, and cultural advance from the Congress of Vienna to World War I. Rogel.

Wi Qtr. 5 cl.

615 France, 1815-1914 U G 5

France's transformation from a rural, traditional society to a modern, industrial society, and the relation of this transformation to 19th century political and intellectual movements. Rothney.

Au Qtr. 5 cl.

616 France in the 20th Century U G 5

The impact on France of two world wars, the depression and decolonization, with emphasis on the breakdown of the political system and the emergence of a new society from the wreckage of the old. Rothney.

Wi Qtr. 5 cl.

618 Modern Germany, 1815 to Present U G 5

Political, social, economic, and cultural developments; the national and liberal movements; unification; Empire; Weimer Republic; Nazi Regime; the two Germanys. Dorpalen.

Wi Qtr. 5 cl.

620 European Diplomacy, 1871-1939 U G 5

Imperialism and the Alliance systems leading to World War I; the Paris Peace Conference, and the political and economic diplomacy prior to World War II. Murray.

Sp Qtr. 5 cl.

621 History of Physical Science**621.01† Rise of Modern Physical Science, 1500-1778 U G 5**

The history of the physical sciences, 1500-1778. Fullmer.

Au Qtr. 5 cl. Not open to students with credit for 619.

621.02 Rise of Modern Physical Science, 1779-1904 U G 5

The physical sciences from the end of the Enlightenment to 1904 and their intellectual and institutional interrelationships with Western society. Fullmer.

Au Qtr. 5 cl. Not open to students with credit for 621.

621.03 Twentieth Century Physical Sciences U G 3

Emergence of the modern scientific community; impact of relativity theory, quantum theory, and atomic theories upon that community and upon international events. Fullmer.

Wi Qtr. 3 cl.

622 European Intellectual History U G 5**622.01 Intellectual History of 19th Century Europe**

Ideas and ideologies in their social and economic setting, including laissez-faire liberalism, Darwinism, and the various schools of socialism. Poirier.

Au Qtr. 5 cl. Not open to students with credit for 622.

622.02† Intellectual History of 20th Century Europe

European thought as it anticipates and reflects the crises of the 20th century: the new physics, psychoanalysis, phenomenology, the modern novel, existentialism, and political thought. Wi Qtr. 5 cl.

623† Economic History of Modern Europe, 1700-1840 U G 5

Factors of pre-industrial economic growth, economic policies of the European states, evolution of economic thought, the first Industrial Revolution and its effects on European society. Au Qtr. 5 cl.

624† Economic History of Modern Europe, 1840 to Present U G 5

Comparative study of industrial expansion, economic liberalism, protectionism, socialism, productivity and social reform in the 20th century, economic effects of the World Wars. Wi Qtr. 5 cl.

625 History of European Warfare U G 5**625.01 History of European Warfare from the Renaissance to 1815**

An analysis of military affairs and of their interaction with political, economic, and social history. Murray. Wi Qtr. 5 cl. Not open to students with credit for 745.

625.02 History of European Warfare from 1815 through the Second World War

A continuation of 625.01; an analysis of war and society in the 19th and 20th centuries. Murray. Sp Qtr. 5 cl.

626 East Central Europe U G 5**626.01† Habsburg Empire, 1740-1918**

A century and a half of Habsburg history with emphasis on Austria's responses to Enlightenment ideas, the French Revolution, social change, industrialization, and emerging nationalisms. Rogel.

Sp Qtr. 5 cl. Not open to students with credit for 735.

626.02† Balkans from the Ottoman Conquest to World War I

A historical survey of the Balkan peoples; political, social, economic, and cultural development; emphasis on the emergence and expression of Balkan nationalisms. Rogel.

Wi Qtr. 5 cl. Not open to students with credit for 736.

626.03 East Central Europe since 1919

A survey of East Central Europe from the end of World War I to the present. Rogel.

Sp Qtr. 5 cl. Not open to students with credit for 737.

630 Medieval England U G 5

England from the Roman conquest to 1485; Anglo-Saxon society and institutions; the Norman conquest; law and parliament; social, intellectual, and economic growth of the English people. Pegues. Wi Qtr. 5 cl.

631 Tudor and Stuart England U G 5

The religious, political, economic, imperial, and intellectual development of the English people from 1485 to 1714, with special attention to the constitutional struggles of the 17th century. Roberts. Au Qtr. 5 cl.

632 England in the 18th and 19th Centuries U G 5

The course of political, social, and intellectual change, of industrial and commercial growth in

Hanoverian, and Victorian England. Poirier.

Wi Qtr. 5 cl.

633 England in the 20th Century U G 5

A study of Britain since 1900 with special emphasis on the rise of the Labour party and the development of the social welfare state. Poirier.

Sp Qtr. 5 cl.

634† Soviet Union and East-West Relations, 1917 to Present U G 5

Evolution of the structure, personalities, and principles of both the Russian Communist Party and the State, and their effects on the external affairs of the U.S.S.R.

Au Qtr. 5 cl.

635 History of Russia to 1801 U G 5

A survey from the origins of the Russian state to the end of the 18th century. Curran.

Wi Qtr. 5 cl.

636 History of Russia, 1801-1914 U G 5

A survey from the accession of Alexander I to the outbreak of the First World War. Curran and Morley.

Wi Qtr. 5 cl.

637 Soviet Russia U G 5

Beginning with the background and events of the revolution of 1917, this course analyzes developments in Russian history from World War I to the present. Morley and Curran.

Au, Sp Qtrs. 5 cl.

638 Russian Intellectual History U G 5

A survey of the main currents of Russian social, political, economic, and philosophical thought in the 19th century; Liberalism, Conservatism, and Socialism. Curran.

Sp Qtr. 5 cl.

639 Modern Poland U G 3

Background on the partitions of Poland and the revolutions of the 19th century; emphasis on the period since 1918. Morley.

Sp Qtr. 3 cl.

640† Islamic Spain and North Africa U G 5

Major problems in history and culture of Islamic Spain (712-1492) and North Africa (641-present), including Egypt; special emphasis on nomadism, revivalism. Waldman.

Au Qtr. 5 cl.

641 Early Islamic Institutions, 600-1258 U G 5

Origins and early development of selected fundamental Islamic institutions in their historical and cultural context. Waldman.

Au Qtr. 5 cl.

642 Ottoman Empire, 1300-1800 U G 5

The Ottoman Empire from frontier warrior band to world power to "Sick Man of Europe"; factors in upsurge and decline; cultural interaction with the West. Findley.

Au Qtr. 5 cl.

644 Middle East in the Modern Era, 1800 to Present U G 5

Modernization of the Middle East, from the early autocratic modernizers to the present; economic, social, political, and intellectual transformations; modern Middle East in world perspective. Findley.

Wi Qtr. 5 cl. Not open to students with credit for 643.

645 History of India and Central Asia U G 5

645.01 Iran and Central Asia

History of the Iranian plateau from the Ghaznavid Empire to the Rise of the Qajars (1000-1798 A.D.); emphasis on the interaction of nomadic and urban societies. Dale and Waldman.

Sp Qtr. 5 cl.

645.02 Muslim India

The Sultanate and Mughal Empires (1000-1707 A.D.); emphasis on imperial institutions and the interaction of Hindu and Muslim societies. Dale.

Sp Qtr. 5 cl.

645.03† Modern India

Selected topics in modern Indian history, emphasizing the problems of modernization and the origins of Pakistan. Dale.

Sp Qtr. 5 cl.

647 History of Traditional Japan U G 5

Problems regarding the political, intellectual, and institutional history of Japan prior to the arrival of Perry (1851). Bartholomew.

Au Qtr. 5 cl.

648 History of Modern Japan U G 5

Political, social and intellectual history of Japan from the beginning of the Meiji Period (1868) to the present. Bartholomew.

Wi Qtr. 5 cl.

651 Latin American History U G 5

651.01 Colonial Latin American History

Mayan, Aztec, and Inca Empires; the Spanish and Portuguese conquests and the transplanting of Iberian institutions; the Baroque period; the Bourbon Century and the Enlightenment. Cooper.

Wi Qtr. 5 cl. Not open to students with credit for 651.

651.02† South America since Independence

Nation-building in the South American republics during the 19th and 20th centuries with special emphasis on Argentina and Brazil. Cooper.

Au Qtr. 5 cl. Not open to students with credit for 652.

651.03† Caribbean Civilization Since 1800

Political, cultural, social and economic history of The West Indies (especially Cuba, Haiti and Dominican Republic), Central America, Venezuela and Colombia since independence. Cooper.

Sp Qtr. 5 cl. Not open to students with credit for 653.

651.04† Social and Economic History of Latin America

Patterns in the history of race, class, land, industry, and foreign influences; emphasis on the National Period, and on Mexico, Argentina, and Brazil. Cooper.

Au Qtr. 5 cl. Not open to students with credit for 655.

651.05† Portuguese Colonial Empire, 1415-1822

Emphasis on Brazil including some related materials on colonialization in Africa and Asia; thematic approach to imperial political, economic, and cultural development; independence of Brazil. Cooper.

Wi Qtr. 5 cl. Not open to students with credit for 691.

651.06 History of Brazilian Civilization, 1822 to Present

Political, cultural, social and economic developments since independence; themes include racial problems, foreign affairs, agriculture,

industrialization, education and urban culture, militarism; man in the tropics. Cooper.

Sp Qtr. 5 cl. Not open to students with credit for 692.

651.07 History of Mexico

History of Mexico during precolonial, colonial, and independence periods with emphasis on the 19th and 20th centuries. Cooper.

Au Qtr. 5 cl. Not open to students with credit for 180.04 or 699.

656 American Colonies U G 5

The transplanting of European civilization to North America, the resultant international rivalries, and the political, social, and economic life of the English colonies to 1763. Bowers, Chapin, and Coles.

Au Qtr. 5 cl.

658 American Revolution and New Nation, 1763-1800 U G 5

A continuation of 656 but may be taken separately; primary emphasis on social, intellectual, and economic factors. Bowers, Chapin, and Coles.

Sp Qtr. 5 cl.

659 Jefferson and Jacksonian Democracy, 1800-1840 U G 5

A continuation of 658 but may be taken separately. Primary emphasis on ideological, cultural, and political factors. Bowers, Chapin, and Coles.

Su Qtr. 5 cl.

660 Westward Movement since 1783 U G 5

The westward spread of settlement and the influence of the westward movement on American development. Blackford.

Wi Qtr. 5 cl.

661 Slavery Controversy in the United States U G 3

The social system of the Old South; the various aspects of the controversy; secession and the impact of war. Dillon.

Wi Qtr. 3 cl.

662 Civil War and Reconstruction U G 3

The causes, character, and consequences of America's intersectional war and the post-war settlement. Benedict and Dillon.

Sp Qtr. 3 cl.

663 History of Technology in America U G 5

663.01 History of Technology in America to 1876

From craft to "know-how"; European transfers; sources of invention; specific patterns of technical change; rise of professional engineering; technology and culture. Smith.

Wi Qtr. 5 cl.

663.02 History of Technology in America since 1876

A historical inquiry into the problems and promises of Machine Age America with emphasis on the nature of technological change and society's reaction to that change. Smith.

Sp Qtr. 5 cl.

668 American Military Policy U G 5**668.01 American Military Policy, 1607-1918**

American military policy from the colonial period through World War I and America's emergence as a world power; emphasis on war-waging and military institutions. Coles and Millett.

Au Qtr. 5 cl. Not open to students with credit for 668.

668.02 American Military Policy, 1919 to Present

Emphasis on collective security, nuclear strategy, and the reciprocal impact of society and military institutions. Coles and Millett.

Sp Qtr. 5 cl. Not open to students with credit for 668.

670 American Foreign Policy to 1914 U G 5

Emphasis on these topics: the revolution, neutral rights, the Monroe Doctrine, continental expansion, the Civil War, overseas expansion, Far Eastern policy. Eckes and Zahniser.

Sp Qtr. 5 cl.

671 American Foreign Policy since 1914 U G 5

Emphasis on these topics: United States relations with Europe, Far East, and Latin America since 1914. Eckes and Zahniser.

Sp Qtr. 5 cl.

672† Social and Economic History of the United States, 1815-1865 U G 5

The development of economic institutions and their relation to economic growth and to movements for social and political reform. Smith.

Wi Qtr. 5 cl.

677† History of American Philanthropy and Social Welfare U G 3

Major influences in American philanthropy and social welfare since the colonial period. Bremner.

Au Qtr. 3 cl. Prereq: 104, 123, or 150.02 or permission of instructor.

678 American Social Thought, 1865-1919 U G 5

Trends in American social thought in the late 19th and early 20th centuries. Bremner.

Au Qtr. 5 cl. Prereq: 104, 123, or 150.02.

679 American Social Thought since 1919 U G 5

A historical examination of trends in American social thought since World War I. Bremner.

Wi Qtr. 5 cl. Prereq: 104, 123, or 150.02.

680† History of American Science to 1900 U G 3

Flowering of scientific inquiry in colonial America; professionalization and expansion of science in the 19th century; Darwinism in America; positivism. Burnham.

Au Qtr. 3 cl.

681 History of American Science since 1900 U G 3

Pragmatism, progressivism, and science; American scientific leadership; the impact of war and depression; the modern scientific crisis. Burnham.

Wi Qtr. 3 cl.

682 Political Parties in the United States U G 5

The origin and growth of national parties and the history of party struggles with emphasis upon presidential elections. Reichard.

Wi Qtr. 5 cl.

683 History of Ohio U G 3

A general survey of state history—social, economic, religious, and political—from the Indian period to the present time. Coles and Hopkins.

Wi Qtr. 3 cl.

684 History of American Medicine U P G 3

Disease, public health, and the profession and practice of medicine in America from colonial times to the present. Burnham.

Sp Qtr. 3 cl.

685 United States Constitutional History: The Federal System U G 5

Historical development of constitutional powers and functions of the federal and state governments and intergovernmental relationships. Benedict and Chapin.

Wi Qtr. 5 cl.

686† United States Constitutional History: Rights and Immunities U G 5

Historical development of the constitutional rights and immunities of the citizen. Benedict and Chapin.

Wi Qtr. 5 cl.

687† United States History and the Social Sciences U G 3

Recent developments in the theory and practice of history as a social science using American historical materials. Burnham.

Sp Qtr. Prereq: 20 cr hrs of 600-level hist courses.

688 American Urban History U G 5**688.01 American Urban History Since Colonial Times**

A survey of American urban development, and its impact on national history from the beginning of colonization to the present. Hopkins.

Au Qtr. 5 cl.

689 American Labor History U G 5**689.01 History of the American Labor Movement**

Evolution of trade unionism in American life from the late 18th century to the present; attention to critical evolution of changes in labor history. VanTine.

Sp Qtr. 5 cl.

690† American Intellectual History U G 5**690.02† Roots of American Thought**

European origins of and influences upon American thought from 1600 to 1800, and American reactions; survey of political, economic, social, and religious questions. Hoffer.

Au Qtr. 5 cl.

690.03† American Historical Writing and the Intellectual Scene

Historians, as representatives and observers of their times, from Cotton Mather to the New Left. Hoffer.

Sp Qtr. 5 cl.

693 Individual Studies U G 1-3

Individual study in some field of historical development; designed to allow the student to work on a problem in which he is particularly interested. Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

694 Group Studies U G 1-5

The investigation of particular problems in various fields of history.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 30 cr hrs.

695 Classical China, 1400 B.C. to 220 A.D. U G 5

The political, economic, and cultural life of ancient China from the Shang dynasty to the end of the Han dynasty. Chang and Chu.

Au Qtr. 5 cl.

696 Traditional China, 220 A.D. to 1800 A.D. U G 5

The political, economic and cultural life of Medieval China from the Age of Disunity to 1800 A.D. Chang and Chu.

Wi Qtr. 5 cl.

697 Modern China, 1800-1949 U G 5

History of modern China with emphasis on cultural contact between China and the West. Chang and Chu. Sp Qtr. 5 cl.

706 Studies in Medieval History**706.01† Advanced Readings in Medieval History U G 5**

Advanced reading course in sources and monographs on the principal issues and problems in medieval history, with a stress on bibliography. Gregory, Lynch, and Pegues.

Wi Qtr. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 20 cr hrs. Not open to students with credit for 706.

706.02† Late Medieval Paleography and Diplomatics U G 3

Cursive hands in literature and diplomas, 1200-1500; the development of chanceries; notariats, secretariats, and the science of diplomatics; exercises with facsimiles, slides, and microfilm. Pegues.

Sp Qtr. Prereq: Permission of instructor. Not open to students with credit for 806.

708 Studies in Ancient History U G 5

An intensive study of selected problems and sources in ancient history (Near Eastern, Greek and/or Roman); readings in the primary and secondary materials. Balcer and Gregory.

Sp Qtr. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 15 cr hrs.

710† Studies in Renaissance or Reformation History U G 5

Principal issues in the history of the Renaissance or the Reformation. Kittelson.

Wi Qtr. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 10 cr hrs.

711† Studies in Central Europe, 1400-1740 U G 5

Rise of the Habsburg dynasty; the Hussite Revolution in Bohemia; the Turkish conquest of Hungary; rulers and estates; the consolidation of the Habsburg Monarchy. Snider.

Au Qtr. Repeatable to a maximum of 15 cr hrs.

712† Studies in Early Modern European History U G 5

Selected topics in western European history of the 17th and 18th centuries. Rule and Snider.

Sp Qtr. Prereq: 612 or permission of instructor. Open only to grad students and by permission to srs majoring in history. Repeatable to a maximum of 15 cr hrs.

714† Studies in French History since 1815 U G 5

An intensive study, through reading and discussion of standard works and recent scholarship, of the chief interpretative problems of modern French history. Rothney.

Au Qtr. Prereq: Grad standing or by permission to srs majoring in history. Repeatable to a maximum of 10 cr hrs.

721 Studies in the History of Science and Technology U G 5

Selected themes in the history of science and technology with emphasis on current problems. Bartholomew, Burnham, Fullmer, and Smith.

Au Qtr. 5 cl. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 20 cr hrs.

726 Studies in Jewish History U G 5

An intensive study of selected issues in Jewish history emphasis on problems posed by available source material and by current research in the area. Chazan and Raphael.

Au, Sp Qtrs. Prereq: Grad standing or by permission to srs majoring in history. Repeatable to a maximum of 15 cr hrs.

727 Studies in Islamic History U G 5

Selected topics in Islamic history and historiography. Dale, Findley, and Waldman.

Sp Qtr. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 15 cr hrs.

730 Studies in European History, 1815-1914 U G 5

Political and social impact of Industrial Revolution; authoritarianism vs. liberalism; Church vs. State; nationalism; imperialism; emphasis on methods of historical research and documentary analysis. Dorpalen.

Wi Qtr. Open only to grad students and by permission to srs majoring in history.

731 Studies in European History, 1914 to Present U G 5

Political, social, and economic developments; World Wars I and II; Communism, Nazism; present-day Europe; emphasis on methods of historical research and documentary analysis. Dorpalen.

Au Qtr. Open only to grad students and by permission to srs majoring in history. Repeatable to a maximum of 10 cr hrs.

732† Studies in German History U G 5

Exploration of selected topics of 19th and 20th century German history; emphasis on methods of historical research and documentary analysis. Dorpalen.

Wi Qtr. Prereq: 618 or equiv. Open only to grad students and by permission to srs majoring in history.

733† Studies in German Social and Economic History U G 5

Exploration of selected problems in the modernization of German society and the German economy since the late 18th century.
 Su Qtr. Prereq: 618 or 624, or permission of instructor.
 Open only to grad students and by permission to srs majoring in history.

738† Studies in British History U G 5

Selected problems in British history since 1760; emphasis on different schools and interpretations, on methods of research, and an analysis of documents. Poirier.

Wi Qtr. Prereq: Graduate standing or permission of instructor. Repeatable to a maximum of 10 cr hrs.

740 Studies in Russian and Soviet History U G 5

An intensive study of problems in selected periods of Russian history. Adams, Curran, and Morley.

Au Qtr. Open only to grad students and by permission to srs majoring in history. Repeatable to a maximum of 15 cr hrs.

751† Studies in Latin American History U G 5

An intensive study of problems in selected periods of Latin American history. Cooper.

Wi Qtr. Prereq: Grad standing or permission of instructor for srs majoring in history or a cognate Latin American field. Repeatable to a maximum of 10 cr hrs.

761 Studies in Mid-19th Century American History U G 5

An intensive study of selected topics with emphasis on historiography and bibliography. Dillon.

Au Qtr. Repeatable to a maximum of 10 cr hrs.

765† Studies in Quantitative History U G 5

Prereq: Permission of instructor.

765.01 Studies in Quantitative History I

A methodological introduction to the literature of quantitative history. Watts.

Wi Qtr. 3 cl, 2 lab hrs.

765.02 Studies in Quantitative History II

Application of computers to quantitative historical research. Watts.

Sp Qtr. 3 cl, 2 lab hrs.

768 Studies in Military Thought and Strategy U G 5

Analysis and comparison of the most influential writers on the theory and practice of warfare including Machiavelli, Clausewitz, Mahan, Bloch, and Douhet. Millett.

Wi Qtr. Prereq: 668 or equiv.

770† Studies in the History of American Foreign Policy U G 5

Studies in the main problems of American foreign policy with primary emphasis on basic literatures and selected primary materials. Zahniser and Eckes.

Wi Qtr. Prereq: 670. Repeatable to a maximum of 15 cr hrs.

772 Studies in Recent United States History U G 5

Readings in selected topics in American history since 1898. Bremner, Burnham, Kerr, and Reichard.

Au, Sp Qtrs. Prereq: Undergrads by permission of instructor. Repeatable to a maximum of 20 cr hrs.

777† Studies in the History of American Philanthropy and Social Welfare U G 5

Documentary and monographic readings on the history of American philanthropy and social welfare. Bremner.

Wi Qtr. Prereq: 677 or permission of instructor. Repeatable to a maximum of 10 cr hrs.

781† Studies of Women in History U G 5

An intensive study of selected issues in the history of women with emphasis on historiography and bibliography. Rupp and Van Tine.

Au Qtr. Repeatable to a maximum of 10 cr hrs.

H783 Honors Course U 3-5

Informal conferences to allow full scope to the initiative of the student; a special topic is assigned and results are tested by papers and special examinations.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing and 40 cr hrs in history courses with a grade of A in at least half of the history courses and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degree BA with distinction in history. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs.

784† Readings in American Constitutional and Legal History U G 5

An intensive investigation of standard works as well as influential and seminal articles in American constitutional and legal history. Chapin and Benedict.

Wi Qtr. 1 3-hr cl. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

785† Studies in Early American History U G 5

Studies in the basic historical literature of 17th and 18th century America. Chapin.

Sp Qtr.

788 Studies in American Urban History U G 5

A detailed examination of several themes in the growth of urban America. Hopkins.

Sp Qtr. Prereq: 688 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

789† Studies in American Labor History U G 5

An intensive study of selected issues in American labor history with emphasis on historiography and bibliography. Van Tine.

Sp Qtr. Prereq: Grad standing or permission of instructor.

791 Introduction to Historical Methods U G 5

The nature of history, collecting evidence, principles of criticism, the logic of historical explanation, generalizations in history, exposition and style. Roberts.

Au Qtr. 5 cl.

798 Studies in Modern Chinese History U G 5**798.01† Advanced Readings in Modern Chinese History**

Readings in documents and monographs illustrating the principal issues and problems in 19th and 20th century Chinese history. Li.

Wi Qtr. 1 2-hr cl. Repeatable to a maximum of 9 cr hrs. Not open to students with credit for 798.

798.02 Studies in the History of Sino-American Relations

A study of the commercial, cultural, and diplomatic relations between China and the United States in the 19th and 20th centuries. Li.

Wi Qtr. Prereq: Permission of instructor. Not open to students with credit for 795.

799 Studies in Traditional Chinese History U G 3**799.01† Studies in Ming and Ch'ing History**

Studies in the history of China under Ming and Ch'ing from 1368 to 1911, with special emphasis on important political leaders and institutions. Li.

Wi Qtr. Prereq: 696 or permission of instructor. Repeatable to a maximum of 9 cr hrs. Not open to students with credit for 799.

799.02 Chinese Historiography

The development of Chinese historical writing from ancient to modern times, with special emphasis on great historians and their representative works. Li.

Au Qtr. 2 cl. Prereq: Permission of instructor. Not open to students with credit for 796.

800† Seminar in Renaissance and Reformation History G 5

Research topic to be announced. Kittelson.

Au Qtr. Repeatable to a maximum of 15 cr hrs.

801 Seminar in German History G 5

Research topic to be announced. Dorpalen.

Sp Qtr. Repeatable to a maximum of 15 cr hrs.

802† Seminar in Russian and Soviet History G 5

Curran and Morley.

Au, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

803 Seminar in British History G 5

Poirier and Roberts.

Sp Qtr. Repeatable to a maximum of 15 cr hrs.

804 Seminar in East Central European History G 5

Research topic to be announced. Rogel.

Au Qtr. Repeatable to a maximum of 15 cr hrs.

805† Seminar in French History G 5

Rule and Rothney.

Wi Qtr. Repeatable to a maximum of 15 cr hrs.

807† Seminar in Medieval History G 5

Lynch and Pegues.

Sp Qtr. Repeatable to a maximum of 15 cr hrs.

808† Seminar in Ancient History G 5

Topic to be announced. Balcer and Gregory.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

813† Great European Historians G 5

A study of the leading historical writers and schools of Europe, with selected readings from representative writers. Roberts and Rothney.

Sp Qtr.

814 Great American Historians G 5

A study of the leading American writers and schools of history. Coles and Hoffer.

Su, Au Qtrs. 1 cl.

840† Seminar in the History of the Physical Sciences G 5

Research topic to be announced. Fullmer.

Wi Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

845 Seminar in East Asian History G 5

Research topic to be announced. Bartholomew, Chang, and Chu.

Au Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

850 Seminar in History G 5

Research topic to be announced.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of grad chairman and dept chairman. Repeatable to a maximum of 15 cr hrs.

851† Seminar in Latin American History G 5

Subject to instructor's approval, students may research any country, theme or time period not excluding related fields, such as foreign relations, European background, Indians or Chicanos. Cooper.

Wi Qtr. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

862 Seminar in Jewish History G 5

Chazan and Raphael.

Wi Qtr. Repeatable to a maximum of 15 cr hrs.

865 Seminar in American Social and Intellectual History I G 5

Bremner.

Wi Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs. 865 must be followed by 866.

866 Seminar in American Social and Intellectual History II G 5

Bremner.

Sp Qtr. Prereq: 865 and permission of instructor. Repeatable to a maximum of 10 cr hrs.

867 Seminar in American History to 1800 G 5

Research topic to be announced. Dillon and Benedict.

Wi Qtr. Repeatable to a maximum of 15 cr hrs.

868 Seminar in Nineteenth Century American History G 5

Research topic to be announced. Kerr, Reichard and Smith.

Au Qtr. Repeatable to a maximum of 15 cr hrs.

869 Seminar in Twentieth-Century American History G 5

Research topic to be announced. Bowers and Chapin.

Sp Qtr. Repeatable to a maximum of 15 cr hrs.

870 Seminar in Selected Topics in American History G 5

Research topic to be announced. Bremner, Coles, Hopkins, Van Tine, and Zahniser.

Wi Qtr. Repeatable to a maximum of 15 cr hrs.

873† Seminar in United States Military History G 5

Millett.

Sp Qtr. Prereq: 668 or equiv. Repeatable to a maximum of 15 cr hrs.

880 History of Psychiatric Concepts G 1

Psychiatric concepts and practices in their intellectual and social milieu from the Enlightenment to the 20th century. Burnham.

Sp Qtr. 1 cl. Prereq: Permission of instructor.

Medieval and Renaissance Culture

See Medvl and Renais S 888.

Medieval and Renaissance Literature

See Medvl and Renais S 889.

899 Interdepartmental Seminar G 1-5

See Interdepartmental Seminars.

999 Research in History G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

History of Art

Office: 101 Student Services Building, 154 West 12th Avenue, 422-7481

111 Introduction to Art U 5

A study of meaning of visual form and imagery in architecture, sculpture, and painting.

Su, Au, Wi, Sp Qtrs. 5 cl.

210 Western Art I U 4

A survey of Ancient and Early Medieval Art.

Su, Au, Wi, Sp Qtrs. 4 cl. H210 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 2nd yr standing.

211 Western Art II U 4

A survey of Romanesque, Gothic, Renaissance, and Mannerist Art.

Au, Wi, Sp Qtrs. 4 cl. H211 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 2nd yr standing.

212 Western Art III U 4

A survey from Baroque to Contemporary Art.

Su, Au, Wi, Sp Qtrs. 4 cl. H212 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 111 or 2nd yr standing.

213 Oriental Art U 5

A survey of Far Eastern Art: India, China, and Japan. S. Huntington.

Au, Sp Qtrs. 5 cl. Prereq: 111 or 2nd yr standing.

216 Introduction to African Art and Archaeology U 5

The art and archaeology of sub-Saharan Africa with emphasis on the historic cultures of the Nok (250 B.C.), Igbo-Ukwu (ca. 800 A.D.), Ife (ca. 1300 A.D.), and Benin (ca. 1400-1900 A.D.). Oditia.

Au Qtr. 5 cl. Prereq: 2nd yr standing.

493 Individual Studies U 2-5

Individual study in some field of historical development; designed to allow the student to work on a problem in which he is particularly interested.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

494 Group Studies U 2-5

The investigation of particular problems in various fields of the history of art.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

515 Renaissance Art in Italy U G 5

A study of architecture, sculpture, and painting in Italy during the 14th, 15th, and 16th centuries. Melnikas.

Sp Qtr. 5 cl. Prereq: Jr standing. Not open to hist art majors.

520 Modern European Art U G 5

European Art from about 1800 to the present, with emphasis on the outstanding masters of painting and sculpture.

Su, Au Qtrs. 5 cl. Prereq: Jr standing. Not open to hist art majors or to students with credit for 635 or 636.

525 Medieval Art U G 5

An introduction to the art and architecture of eastern and western Christendom from the third to the thirteenth century.

Au Qtr. 5 cl. Prereq: Jr standing. Not open to hist art majors or students with credit for 425.

530 American Art U G 5

A study of architecture, painting, and sculpture in America. Groseclose.

Wi, Sp Qtrs. 5 cl. Prereq: Jr standing. Not open to hist art majors or to students with credit for 637 or 638.

550 Art of Paris U G 5

Study of the painting, sculpture, buildings and public and private spaces created in and for the people and the City of Paris. Herban.

Sp Qtr. 5 cl. Prereq: Jr standing.

610 African Art and Archaeology I U G 5

A study of the art and culture of the Western Sudan and Guinea Coast regions with emphasis on stylistic, historic, and archaeological implications. Oditia.

Wi Qtr. 5 cl. Prereq: 216 or permission of instructor.

611 African Art and Archaeology II U G 5

The study of the art and culture of the Equatorial Forest and Southern Savannah regions with emphasis on stylistic, historic, and archaeological implications. Oditia.

Sp Qtr. 5 cl. Prereq: 216 or permission of instructor.

614 Comparative Study of African and European Art U G 5

A critical study of the relationships between African and European Art involving theory and practice. Oditia.

Wi Qtr. 5 cl. Prereq: Permission of instructor or jr standing.

620 Greek Archaeology U G 5

Archaeological techniques in Greek lands; art and archaeology of Minoan-Mycenaean civilizations; ancient Greek cities, shrines, and cemeteries. Rubright.

Sp Qtr. 5 cl. Prereq: 210 or 10 cr hrs in classics or permission of instructor.

621* Ancient Egyptian Art and Archaeology U G 5

A specialized study of the architecture, sculpture, painting and minor arts of Ancient Egypt. Rubright.

Wi Qtr. 5 cl. Prereq: 210 or equiv with written permission of instructor.

622 Ancient Greek Art U G 5

A study of the development of Greek art from 1000 B.C. to 146 B.C. including sculpture, architecture, vase painting, and other minor arts. Rubright.

Au Qtr. 5 cl. Prereq: Either 210, 10 cr hrs in classics, 10 cr hrs in ancient history, or permission of instructor. Not open to freshmen or sophomores.

623 Ancient Roman Art U G 5

An examination of the architecture, sculpture, and painting of Roman Italy and her Empire from its beginnings down to ca 330 A.D. Schwarz.

Wi Qtr. 5 cl. Prereq: Either 210, 10 cr hrs in classics, 10 cr hrs in ancient history, or permission of instructor. Not open to freshmen or sophomores.

624 Early Christian and Byzantine Art U G 5

The Christian art of the Mediterranean region to the 8th century and the art of the Byzantine Empire to the 15th century. J. Morganstern.

Au Qtr. 5 cl. Prereq: 210 or permission of instructor.

625 Romanesque and Gothic Art U G 5

The art of Western Europe from the Carolingian period to the 14th century. Ludden.

Wi Qtr. 5 cl. Prereq: 210 and 211 or permission of instructor.

627 Northern Renaissance Art U G 5

Art of the Low Countries, France and Germany from 1350 to 1550—with emphasis on Campin, Jan van Eyck, van der Weyden, van der Goes, Durer, Grunewald, Bosch, and Breughel. A. Morganstern.

Su, Sp Qtrs. 5 cl. Prereq: 211 or permission of instructor.

628 Precursors to the Renaissance Art of Italy U G 5

The establishment of Florentine and Sienese schools of painting during the 13th and 14th centuries as reflected in the works of Giotto and Simone Martini. Melnikas.

Au Qtr. 5 cl. Prereq: 211 or equiv with written permission of instructor.

629 Fifteenth Century Italian Art U G 5

A selective study of painting and sculpture of the Quattrocento. Melnikas.

Su, Wi Qtrs. 5 cl. Prereq: 211 or equiv with written permission of instructor.

630 Sixteenth Century Italian Art U G 5

A study of the major artists of the High Renaissance and Mannerist periods in Italy. Richardson.

Sp Qtr. 5 cl. Prereq: 211 or equiv with written permission of instructor.

631 Art of the 17th Century in Europe U G 5

Painting, sculpture, and architecture in Italy, France, Spain and England, 1590-1700. Richardson.

Au Qtr. 5 cl. Prereq: 212 or equiv with written permission of instructor.

632 Seventeenth Century Art in the Netherlands U G 5

Flemish and Dutch painting of the Golden Age. Liedtke.

Sp Qtr. 5 cl. Prereq: 212 or equiv with written permission of instructor.

634 Art of the 18th Century in Europe U G 5

The development of architecture, painting, and

sculpture from the late Baroque and Rococo to Historicism. Liedtke.

Wi Qtr. 5 cl. Prereq: 212 or equiv with written permission of instructor.

635 Nineteenth Century European Painting and Sculpture U G 5

European painting and sculpture from Neo-Classicism through Post-Impressionism emphasizing the study of the works of the major artists. Herban.

Au Qtr. 5 cl. Prereq: 212 or written permission of instructor.

636 Modern European Painting and Sculpture, 1900-1945 U G 5

European painting and sculpture, 1900-1945, with emphasis on the major masters and movements.

Su, Wi, Sp Qtrs. 5 cl. Prereq: 212 or written permission of instructor.

637 American Painting and Sculpture to 1900 U G 5

History of painting and sculpture in America from colonial times to the end of the 19th century. Groseclose.

Sp Qtr. 5 cl. Prereq: 212 or written permission of instructor.

638 Modern American Painting and Sculpture, 1900-1945 U G 5

American painting and sculpture from 1900 to 1945. Groseclose.

Au Qtr. 5 cl. Prereq: 212 or written permission of instructor.

640* Contemporary Art Since 1945 U G 5

Visual arts of Europe and the United States from 1945 to the present. Groseclose.

Sp Qtr. Prereq: 212 or permission of instructor.

661* Art and Archaeology of the Ancient Near East U G 5

A specialized study of the art and archaeology of the ancient Near East focusing on the cultures of the Mesopotamian valley and surrounding areas. Crane.

Wi Qtr. 5 cl. Prereq: 210 or equiv with written permission of instructor.

663 Islamic Art and Architecture U G 5

The art and architecture of Islam within cultural and historical settings emphasizing differences in regional developments, and unity provided by a common culture. Crane.

Sp Qtr. 5 cl. Prereq: 210 or 213 or equiv with written permission of instructor.

670 Buddhist Art: Theory and History U G 5

An analysis of Buddhism and its bearing on the art of India, Nepal, Tibet, China, and Japan, and an opportunity to examine actual objects. J. Huntington.

Au Qtr. 5 cl. Prereq: 213, or Hist 265, or Japanese 231, or Chinese 231; or equiv with written permission of instructor.

671 Art of India I U G 5

Buddhist Art of India and Indian Asia including Ceylon, Indonesia and Indo-China with emphasis on Buddhist thought as related to monuments. S. Huntington.

Au Qtr. 5 cl. Prereq: 213 or permission of instructor. Not open to students with credit for 616.

672 Art of India II U G 5

Hindu Art of India and Indian Asia from the Indus civilization to modern times, emphasizing the religious aspects of society and art. S. Huntington. Wi Qtr. 5 cl. Prereq: 213 or permission of instructor. Not open to students with credit for 617.

673* Art of Central Asia U G 5

An analysis of the cross currents of style and iconography that constitute the pre-Moslem art of Central Asia. J. Huntington. Wi Qtr. 5 cl. Prereq: 213, or History 265, or Chinese 231; or equiv with written permission of instructor.

674†* Art of Nepal and Tibet U G 5

A study and analysis of the major aspects of style, iconography, and historical sequence as found in the arts of Nepal and Tibet. J. Huntington. Sp Qtr. 5 cl. Prereq: 213, or History 265, or Chinese 231; or equiv with written permission of instructor.

675 Art of India III U G 5

A survey of architecture and painting after the Muslim conquest with emphasis on intermixture of indigenous and foreign styles. S. Huntington. Sp Qtr. Prereq: 213 or permission of instructor.

676* Hindu Iconography U G 5

A survey of Hindu iconography from a historical viewpoint emphasizing the development and meaning of specific deities. S. Huntington. Wi Qtr. 5 cl. Prereq: 213 or permission of instructor.

677* Chinese Art: Buddhist and Pre-Buddhist U G 5

An analytical study of the Pre-Buddhist and Buddhist art of China documenting both Trans-Asian influences and internal contributions. J. Huntington. Au Qtr. 5 cl. Prereq: 213, or History 265, or Chinese 231; or equiv with written permission of instructor. Not open to students with credit for 618.

678†* Chinese Art: Painting U G 5

An analytical study of the traditional schools of Chinese painting with regard to style, formal development, Chinese aesthetics and intellectual history. J. Huntington. Wi Qtr. 5 cl. Prereq: 213, or History 265, or Chinese 231; or equiv with written permission of instructor.

680* Art of Japan U G 5

A cultural and history of Japan in terms of monuments, people, and beliefs. J. Huntington. Sp Qtr. 5 cl. Prereq: 213, or History 265, or Japanese 231; or equiv with written permission of instructor. Not open to students with credit for 619.

693 Individual Studies U G 2-5

Advanced study for students in specialized programs. Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

694 Group Studies U G 2-5

Group studies for students in specialized programs. Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

695 Undergraduate Seminar U 3

An undergraduate seminar dealing with selected problems of general interest in the history of art in the Western, Asian, or African fields. Su, Au, Wi, Sp Qtrs. Arr. Prereq: Normally 30 cr hrs of hist art on the 200-level or above, or equiv with written permission of instructor. Required of majors. Repeatable to a maximum of 6 cr hrs.

704 Studies in African Art and Archaeology U G 3-5

Studies in African art emphasizing problem identification, concept organization, library research, and individual criticism. Odita. Au Qtr. 3-5 cl. Prereq: 610 or 611. Repeatable to a maximum of 15 cr hrs.

710 Studies in Art Theory and Criticism U G 3-5

Investigations of theories of art and their applications. Ludden. Su, Wi Qtrs. Not open to students with credit for 839. Repeatable to a maximum of 15 cr hrs.

715 Research Methods in Art History U G 3

Investigations of source materials, bibliography, concepts, and techniques of research. Au, Sp Qtrs. Prereq: 20 cr hrs in hist art.

717 Studies in Medieval Art U G 3-5

Selected problems in architecture, painting, sculpture and the minor arts from the Early Christian through the Byzantine and Gothic periods. Ludden, A. Morganstern and J. Morganstern. Wi Qtr. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

718 Studies in Italian Renaissance Art U G 3-5

Selected problems in painting, sculpture, and architecture of Italy in the 14th, 15th, and 16th centuries. Melnikas and Richardson. Au Qtr. 3-5 cl. Prereq: 515 or 629 or 630, or permission of instructor.

720 Studies in Near Eastern Art and Archaeology U G 3-5

Selected problems in the art and archaeology of the Near East. Crane and Rubright. Sp Qtr. Prereq: 618, 621, or 663, or equiv with written permission of instructor. Repeatable to a maximum of 15 cr hrs.

722 Studies in Ancient Greek and Roman Art U G 3-5

Selected problems in the art of Ancient Greece and Rome, 11th century B.C. to 4th century A.D. Rubright and Schwarz. Au, Sp Qtrs. 3-5 cl. Prereq: 622 or 623 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

724 Studies in Northern Baroque Art U G 3-5

Selected problems in the painting, sculpture, and architecture of Belgium, Holland, Germany, and France in the 17th and 18th centuries. Liedtke. Sp Qtr. 3-5 cl. Prereq: 631. Repeatable to a maximum of 15 cr hrs.

725 Studies in Italian Baroque Art U G 3-5

Selected problems in the painting, sculpture, and architecture of the 17th century. Richardson. Sp Qtr. 3-5 cl. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

726† Studies in Spanish Art U G 3-5

A selective study of the architecture, sculpture, painting, and minor arts of Spain. Richardson. Wi Qtr. 3-5 cl. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

737 Studies in Modern Art U G 3-5

Selected studies in the art of the United States or modern Europe. Herban.

Su, Au Qtrs. 3-5 cl. Prereq: Either 635, 636, 637, 638, or permission of instructor. Repeatable to a maximum of 15 cr hrs.

747 Studies in Northern Renaissance Art U G 3-5

Selected problems in the art of the Low Countries, Germany, and France from the 14th through the 16th centuries. A. Morganstern.

Au Qtr. 3-5 cl. Prereq: 627 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

770 Studies in Asian Art U G 3-5

Introduction to major research problems in Asian art history; specialized bibliography and research directions as applied to selected topics. Huntington.

Au, Wi, Sp Qtrs. 3-5 cl. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

771 Studies in the Art of India U G 3-5

Research problems in the art of India at an introductory level. S. Huntington.

Wi Qtr.

H783 Honors Course U 3-5

A program of study arranged for each student, with individual conferences, reports, and Honors thesis.

Au, Wi, Sp Qtrs. Prereq: 4th yr. standing with a grade of A in at least half of the hist of art courses taken and with an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degree BA or BFA with distinction in hist of art. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr. hrs.

793 Individual Studies U G 2-5

Advanced study for students in specialized programs.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

804 Problems in the History of African Art G 5

Research techniques with emphasis on scholarly methods involving extensive search for available source materials on African art. Odita.

Sp Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

810† Problems in Art Theory and Criticism G 5

Ludden.

Sp Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

816 Museum Problems G 3-5

An introduction to professional work in museums.

Sp Qtr. Repeatable to a maximum of 15 cr hrs.

822 Problems in Ancient Art G 3-5

Advanced study and specialized research on major topical problems in ancient art. Crane, Rubright, Schwarz.

Au Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

832 Problems in American Art G 2-5

Groseclose.

Wi Qtr. Prereq: Permission of instructor. Not open to students with a maximum of 15 cr hrs in 932.

Repeatable to a maximum of 15 cr hrs.

870† Problems in Asian Art G 5

Advanced studies and specialized research on major

topical problems in Asian Art. J. Huntington.

Wi Qtr. Prereq: 2 courses in Asian art at the 600 level or permission of instructor. Repeatable to a maximum of 15 cr hrs.

Medieval and Renaissance Culture

See Medvl and Renais S 888.

Medieval and Renaissance Literature

See Medvl and Renais S 889.

893 Individual Studies G 1-5

Doctoral students may register for individual study in areas not normally covered by courses.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

894 Group Studies G 1-5

Group studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

917 Seminar in Medieval Art G 2-5

Ludden.

Sp Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

920 Seminar in Italian Renaissance Art G 2-5

Melnikas.

Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

930 Seminar in Modern Art G 2-5

Herban.

Au Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

971* Seminar in the Art of India G 2-5

Research problems in the art of India. S. Huntington.

Sp Qtr.

999 Research in History of Art G Arr

Research for thesis and dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Home Economics

Office: 201 Campbell Hall, 1787 Neil Avenue, 422-6612

290 Home Economics as a Profession U 2

The scope of home economics as a field of study and as a profession. Sarbaugh and Cavanaugh.

Au, Wi, Sp Qtrs. 2 cl.

H590 Home Economics Colloquia U 3

Topics will be oriented to issues and trends in home economics and will vary by quarter.

Sp Qtr. 3 cl. Prereq: Eligibility for Honors Program in Home Ec. Repeatable to a maximum of 9 cr hrs.

595 Senior Seminar U 2

The professional home economist: performance, position securement, philosophical base and trends of the field of home economics and specific professional concerns.

Au, Wi Qtrs. 1 2-hr cl.

595.01 Family Relations & Human Development

Prereq: 4th yr standing and major in dept.

595.02 Home Economics Education

Prereq: 4th yr standing and major in dept.

595.03 Home Management & Housing

Prereq: 4th yr standing and major in dept.

595.04 Human Nutrition & Food Management

Prereq: 4th yr standing and major in dept.

595.05 Textiles and Clothing

Prereq: 4th yr standing and major in dept.

Home Economics Education

Office: 347 Campbell Hall, 1787 Neil Avenue, 422-4487

289 Introductory Field Experience U 2, 3 or 5

Directed observation-participation experiences in schools, extension, and/or work related to teaching home economics. Reighart.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of Coordinator of Field Experience. Repeatable to a maximum of 10 cr hrs.

294 Group Studies U 2, 3 or 5

Selected topics in home economics education.

Prereq: Open to students who meet dept's stated prereqs. Not open to students with maximum allowable credit for 294.09 or 294.11 or Home Ec 294.09 or 294.11. Repeatable to a maximum of 10 cr hrs.

340 Educative Process in Home Economics U 3

Planning and organizing instructional materials and experiences in home economics professions. Laster.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Majors in home ec, 3rd yr standing. Not open to H Ec Edu teaching majors.

341 Introduction to Home Economics Teaching U 3

Participation in simulated teaching activities with emphasis on planning and use of various instructional strategies. Reighart.

Au, Wi, Sp Qtrs. 2 cl, 1 2-hr lab. Prereq: Acceptance in H Ec Edu; 2nd yr standing; and prereq or concur Psych 230. Not open to students with credit for Home Ec 341.

440 Vocational Home Economics Program U 3

An analysis of the principles and procedures in developing and administering programs in vocational home economics with consideration of federal-state-local relationships.

Su, Wi, Sp Qtrs. 3 cl. Prereq: 341 (or Home Ec 341) or equiv with written permission of instructor.

441 Principles and Methods of Teaching Applied to Home Economics U 5

Consideration of curriculum, methods of teaching, management, and other problems of the home economics teacher.

Au, Wi Qtrs. 3 cl, ½ day arr. Prereq: 341, 40 cr hrs in home ec. Not open to students with credit for Home Ec 441.

443 Methods of Teaching Home Economics in Related Occupations U 5

Consideration of curriculum, methods of teaching, management, and other problems of the home economics teacher in related occupations. Andrian.

Au Qtr. 3 cl, arr hrs for observation and participation. Prereq: Permission of instructor. For vocational certification only. Not open to students with credit for Home Ec 443.

444 Program Planning in Secondary Home Economics U 3

Consideration of curriculum, methods of teaching, management, and other problems of the home

economics teacher. Mears.

Sp Qtr. 3 cl, ½ day arr. Prereq: 440. Not open to students with credit for 441 or Home Ec 441.

446 Program Planning in Home Economics Related Occupations U 3

Consideration of curriculum, management, and other problems of the home economics teacher in related occupations. Reighart.

Su Qtr. 3 cl, arr hrs for observation and participation. Prereq: 440. Not open to students with credit for 443 or Home Ec 443. For vocational certification only.

541 Supervised Home Economics Teaching U 5

Supervised participation in the responsibilities and activities of the home economics teacher in the regular day school and extended school program.

Au, Wi, Sp Qtrs. Full time for 1 qtr for 15 cr hrs. Prereq: 441 (or Home Ec 441) or 444; 2.25 cumulative point-hour ratio. Not open to students with credit for 442 or Home Ec 442.

541.01 Designing Instructional Plans

Concur: 541.02 and 541.03.

541.02 Implementing Instructional Plans

Concur: 541.01 and 541.03.

541.03 Supportive Educational Roles and Responsibilities

Concur: 541.01 and 541.02.

543 Supervised Teaching in Home Economics Related Occupations U 5

Consideration of curriculum methods of teaching, management, and other problems of the Home Economics teacher in related occupation programs.

Au, Wi, Sp Qtrs. Full time for 1 qtr for 15 cr hrs. Prereq: 443 (or Home Ec 443) or 446; 2.25 cumulative point-hour ratio. Not open to students with credit for 445 or Home Ec 445. Supervised student teaching in a vocational job tracg program in the student's area of specialization.

543.01 Designing Instructional Plans

Concur: 543.02 and 543.03.

543.02 Implementing Instructional Plans

Concur: 543.01 and 543.03.

543.03 Supportive Educational Roles and Responsibilities

Concur: 543.01 and 543.02.

589 Field Work U 3, 5 or 10

Su, Au, Wi, Sp Qtrs. Prereq: 3rd or 4th yr standing in home ec, 2.25 cumulative point-hour ratio, and written permission of instructor. Not open to students with maximum allowable credit for 589.09 and 589.11 or Home Ec 589.09 and 589.11. Repeatable to a maximum of 10 cr hrs. Registration 2 qtrs before scheduling.

589.01 Home Economics Education

589.02 Home Economics Extension

593 Individual Studies U 2, 3 or 5

Problems in various phases of home economics education chosen for individual study.

H593 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Su, Au, Wi, Sp Qtrs. 1 or more conf. Prereq: Minimum of 6 cr hrs in subject matter of problem with cumulative point-hour ratio of 2.7 or written permission of instructor. Not open to students with maximum allowable credit for 593.09 or 593.11 or Home Ec 593.09 or 593.11. Repeatable to a maximum of 10 cr hrs.

690 Workshop U G 4

Su Qtr. Full time for 3 wks. Prereq: Written permission of instructor. Not open to students with maximum allowable credit for 690.09 or 690.11 or Home Ec 690.09 or 690.11. Repeatable to a maximum of 12 cr hrs.

694 Group Studies U G 2, 3 or 5

Selected topics in home economics education.

Prereq: Open to students who meet dept's stated prereqs. Not open to students with maximum allowable credit for 694.09 or 694.11 or Home Ec 694.09 or 694.11. Repeatable to a maximum of 10 cr hrs.

740 Trends in Home Economics U G 3

An overview of home economics at the elementary, secondary, higher education, and adult levels; general trends in enrollment, curriculum, supervision, administration, and research. Dalrymple.

Au Qtr. 3 cl. Not open to students with credit for Home Ec 740 or 841.

744 Evaluation in Home Economics U G 3

Procedure for appraising student progress in the attainment of objectives, construction of evaluation instruments, analysis, and interpretation of data from evaluation programs. Gritzmacher.

Sp Qtr. 3 cl. Not open to students with credit for Home Ec 744 or 844.

745 Supervision in Home Economics Education U G 3

For experienced teachers of home economics who are interested in supervising student teachers or in working with home economic teachers in service. Gritzmacher.

Au Qtr. 3 cl. Prereq: Teaching experience in home economics. Not open to students with credit for Home Ec 745.

793 Individual Studies U G 2, 3 or 5

Problems in various phases of home economics education chosen for individual study.

Su, Au, Wi, Sp Qtrs. 1 or more conf. Prereq: Written permission of instructor. Not open to students with maximum allowable credit for 793.09 or 793.11 or Home Ec 793.09 or 793.11. Repeatable to a maximum of 15 cr hrs.

797 Interdepartmental Seminar U G 2-4

See Interdepartmental Seminars.

Not open to students with maximum allowable credit for Home Ec 797. Repeatable to a maximum of 6 cr hrs.

840 Research Methods in Home Economics G 3

Nature of research in various areas of the field; criteria for setting up a research problem; techniques for collecting and analyzing data. Dalrymple.

Su, Au Qtrs. 3 cl. Prereq: Grad standing. Not open to students with credit for Home Ec 840.

842 Home Economics in Higher Education G 3

Present status and function of home economics at the higher education level. Faculty involvement within a home economics unit and in the overall institutional setting. Dalrymple.

Wi Qtr. 3 cl. Prereq: 740 (or Home Ec 740) or equiv with written permission of instructor. Not open to students with credit for Home Ec 842.

843 Seminar in Home Economics Education G 3 or 5

1-2 cl. Prereq: Grad standing in home ec and written permission of instructor. Not open to students with maximum allowable credit for Home Ec 843. Repeatable to a maximum of 15 cr hrs.

a—Home Economics Education Research. Wi Qtr. Gritzmacher.

b—Topics to be announced.

846 Home Economics Teaching Strategies and Learning Theory G 3

Innovative use of teaching methods; relationship to learning theory.

Sp Qtr. 3 cl. Prereq: Written permission of instructor. Not open to students with credit for Home Ec 846.

894 Group Studies G 2, 3 or 5

Selected topics in home economics education.

Prereq: Open to students who meet dept's stated prereqs. Not open to students with maximum allowable credit for 894.09 or 894.11 or Home Ec 894.09 or 894.11. Repeatable to a maximum of 10 cr hrs.

899 Interdepartmental Seminar G 1-5

See Interdepartmental Seminars.

Not open to students with maximum allowable credit for Home Ec 899.

942 Administration in Home Economics G 3

Principles, trends, problems, and evaluative criteria related to home economics units in higher education administrative structure; functions, responsibilities, qualifications of home economics administrative personnel. Dalrymple.

Sp Qtr. 3 cl. Prereq: MS degree in home ec. Not open to students with credit for Home Ec 942.

946† Program Analysis and Design in Home Economics G 3

Theoretical approach to program development; innovation and experimentation in program design in home economics at different levels; analysis and restructuring of existing programs; climate and strategies for change.

Su Qtr. 3 cl. Prereq: 846 (or Home Ec 846) or written permission of instructor. Not open to students with credit for Home Ec 946.

993 Individual Studies G 2, 3 or 5

Problems in various phases of home economics education chosen for individual study.

Su, Au, Wi, Sp Qtrs. 1 or more conf. Prereq: Written permission of instructor. Not open to students with maximum allowable credit for 993.09 or Home Ec 993.09. Repeatable to a maximum of 15 cr hrs.

998 Research Thesis G Arr

Research for master's thesis.

Su, Au, Wi, Sp Qtrs.

999 Research: Dissertation G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Home Management and Housing

Office: 166 Campbell Hall, 1787 Neil Avenue, 422-4389

226 Family Financial Management U 3

The management of family financial resources with emphasis on the choices faced by families, needs of different types of families and public goods as resources. Holyoak.

Su, Au, Sp Qtrs. 3 cl.

228 Home Furnishings: Furniture U 3

Economic factors and trends in materials, construction and finishes; some experience in reconditioning and other techniques. Everhart.

Au Qtr. 1 2-hr cl, 2 2-hr lab. Not open to students with credit for Home Ec 228.

294 Group Studies U 2, 3, or 5

Selected topics in home management and housing.

Prereq: Open to students who meet dept's stated prereqs. Not open to students with maximum allowable credit for 294.05, 294.06, or 294.07 or Home Ec 294.05, 294.06, or 294.07. Repeatable to a maximum of 10 cr hrs.

320 Housing U 3

Housing as it affects family living and is in turn affected by family needs, social and economic trends and the physical environment. Coveney and Everhart.

Wi, Sp Qtrs. 3 cl. Prereq: FM&HU DV 360 or Home Ec 360 or 10 cr hrs in social science. Not open to students with credit for Home Ec 320.

322 Introduction to Home Equipment U 5

Principles involved in the selection, construction, operation, and care of home equipment and their relation to the well-being of the family.

Su, Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 10 cr hrs of natural science and sophomore standing. Not open to students with credit for Home Ec 322.

324 Family Management

Management process of utilizing specific resources for families' well-being with consideration of the interdependence and interrelationships with the environment and associated organizational systems. Holyoak.

Su, Au, Wi, Sp Qtrs.

324.01 Family Management Theory U 3

3 cl. Prereq: 3rd yr standing. Not open to students with credit for 327 or Home Ec 327.

324.02 Family Management Application U 2

Application and integration of management principles in varying household situations.

2 cl, 10 hrs observation arr. Prereq: 3rd yr standing. Concur: 324.01. Not open to students with credit for 427 or Home Ec 427.

326 Consumer and the Market U 3

The market from the consumer point of view; relationships of consumption to environmental quality. Bowers.

Su, Au, Sp Qtrs. 3 cl. Prereq: Econ 100 or 200 and 10 cr hrs of social science. Not open to students with credit for Home Ec 326.

327 Home Management U 5

Management process of utilizing specific resources for family's well-being. Holyoak.

Au, Sp Qtrs. 5 cl. Prereq: 3rd yr standing and Econ 200 or equiv. Not open to students with credit for Home Ec 327.

328 Home Furnishings: Principles U 5

Application of art principles to furnishing a home with consideration of aesthetic, economic, and social factors affecting choice. Everhart.

Su, Au, Wi, Sp Qtrs. 3 cl, 2-hr lab. Prereq: Art 190, 290, or equiv with written permission of instructor. Not open to students with credit for Home Ec 328.

421 Housing: Social and Economic Environment U 3

Application of selected social science research to individual and family housing needs. Coveney.

Wi Qtr. 3 cl. Prereq: 3 cr hrs in econ, 3 cr hrs in sociol, 3 cr hrs in psych. Not open to students with credit for 320 or Home Ec 320 or 421.

425 Housing: Physical Environment U 3

The physical aspects of both housing and the housing environment with concern for their relationships to individual and family satisfactions with housing choices. Everhart.

Au, Sp Qtrs. 2 cl, 2-hr lab. Prereq: FM&HU DV 360 or Home Ec 360 or 10 cr hrs in social science. Not open to students with credit for Home Ec 320 or 425.

427 Home Management U 3

Application and integration of management principles in varying household situations. Holyoak and Stafford.

Wi Qtr. 3 cl, lab hrs arr. Prereq: 327 and sr standing in home ec. Not open to students with credit for Home Ec 427.

589 Field Work U 2, 3, 5 or 10

Wi, Sp Qtrs. Prereq: Sr standing in home ec, 2.25 cumulative point-hour ratio, and written permission of instructor. Not open to students with maximum allowable credit for 589.05, 589.06, or 589.07; or Home Ec 589.05, 589.06, or 589.07. Registration 2 qtrs before scheduling.

593 Individual Studies U 2, 3 or 5

Problems in various phases of home management and housing chosen for individual study.

Su, Au, Wi, Sp Qtrs. 1 or more conf. H593 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Prereq: Minimum of 6 cr hrs in subject matter of problem with cumulative point-hour ratio of 2.7 or written permission of instructor. Not open to students with maximum allowable credit for 593.05 or 593.06 or 593.07 or Home Ec 593.05 or 593.06 or 593.07. Repeatable to a maximum of 10 cr hrs.

622 Food Related Home Equipment U G 5

Experimental problems on the performance of the major types of home equipment used in the preparation of food. Hunt.

Wi Qtr. 4 2-hr cl. Prereq: 322 (or Home Ec 322) and Humn Ntr 314 (or Home Ec 314). Not open to students with credit for Home Ec 622.

623 Home Laundering: Principles and Equipment U G 5

Experience in the techniques and reporting of experimental investigations dealing with home equipment used in laundering and other cleaning processes. Coveney.

Au Qtr. 3 cl, 2 2-hr lab arr. Prereq: 322 (or Home Ec 322), Txtl&Clo 371 (or Home Ec 371), or equiv, 4th yr standing, and written permission of instructor. Not open to students with credit for Home Ec 623.

626 Family Income and Consumption I U G 3

Living arrangements and characteristics of American population, distribution and use of income, and government policy, as determinants of the economic well-being of households and consumers. Rudd.

Au Qtr. 3 cl. Prereq: 326 (or Home Ec 326), and Econ 200. Not open to students with credit for Home Ec 626.

628* Period Furnishings for the Home U G 3

Analysis of furniture styles from antiquity through the present with emphasis on aesthetic, economic, and social implications as well as influencing philosophies.

Su, Sp Qtrs. 2 cl, 1 2-hr lab. Field trips arr. Prereq: 328 or written permission of instructor. Not open to students with credit for Home Ec 628.

629 Consumer Choice U G 3

The social, cultural, and psychological factors which underlie the choices made by nations and individuals with respect to consumption and living patterns. Rudd.

Wi Qtr. 3 cl. Prereq: Econ 400 or equiv with written permission of instructor, and 10 cr hrs of social science.

690 Workshop U G 4

Full time for 3 wks. Prereq: Written permission of instructor. Not open to students with maximum allowable credit for 690.05 or 690.06 or 690.07 or Home Ec 690.05 or 690.06 or 690.07. Repeatable to a maximum of 12 cr hrs.

694 Group Studies U G 2, 3 or 5

Selected topics in home management and housing.

Prereq: Open to students who meet dept's stated prereqs. Not open to students with maximum allowable credit for 694.05 or 694.06 or 694.07 or Home Ec 694.05 or 694.06 or 694.07. Repeatable to a maximum of 10 cr hrs.

793 Individual Studies U G 2, 3 or 5

Problems in various phases of home management and housing chosen for individual study.

Su, Au, Wi, Sp Qtrs. 1 or more conf. Prereq: Written permission of instructor. Not open to students with credit for 793.05 or 793.06 or 793.07 or Home Ec 793.05 or 793.06 or 793.07. Repeatable to a maximum of 15 cr hrs.

797 Interdepartmental Seminar U G 2-4

See Interdepartmental Seminars.

Not open to students with maximum allowable credit for Home Ec 797. Repeatable to a maximum of 6 cr hrs.

822† Seminar in Home Management and Housing G 3 or 5

3 cl. Prereq: 30 cr hrs in Home Ec, including 622 (or Home Ec 622) or 623 (or Home Ec 623) or 825 (or Home Ec 825) or 826 (or Home Ec 826) depending on emphasis of topic, and written permission of instructor. Not open to students with maximum allowable credit for Home Ec 822. Repeatable to a maximum of 15 cr hrs.

a—Home Furnishings and Housing

b—Home Management

c—Home Equipment

d—Consumer and Market

825 Home Management: Activity Analysis G 3

Advanced study in application of work principles to design of appliances, work space areas, and methods of work in the home. Hunt.

Su Qtr. 2 cl. Prereq: 10 cr hrs in home management and home equipment or equiv with written permission of instructor. Not open to students with credit for Home Ec 825.

826 Family Income and Consumption II G 3

Interpretation of theory and research in family income and consumption. Rudd.

Su Qtr. 3 cl. Prereq: 626. Not open to students with credit for Home Ec 826.

827 Home Management: Development and Theory G 3

Historical development and present trends in home management with emphasis on theory and practices. Stafford.

Sp Qtr. 3 cl. Prereq: 324.01 or 327 or Home Ec 327. Not open to students with credit for Home Ec 827.

829 The Consumer in American Society G 3

Analysis of the elements involved in the consumer interest, interrelationships of the elements, cost effectiveness of these methods and distributional impacts of the alternatives.

Au Qtr. 1 2½-hr cl. Prereq: Grad standing and 10 cr hrs in econ or equiv with permission of instructor.

894 Group Studies G 2, 3 or 5

Selected topics in home management and housing.

Prereq: Open to students who meet dept's stated prereqs. Not open to students with maximum allowable credit for 894.05 or 894.06 or 894.07 or Home Ec 894.05 or 894.06 or 894.07. Repeatable to a maximum of 10 cr hrs.

899 Interdepartmental Seminar G 1-5

See Interdepartmental Seminars.

Not open to students with maximum allowable credit for Home Ec 899.

993 Individual Studies G 2, 3 or 5

Problems in various phases of home management and housing chosen for individual study.

Su, Au, Wi, Sp Qtrs. 1 or more conf. Prereq: Written permission of instructor. Not open to students with maximum allowable credit for 993.05 or 993.06 or 993.07 or Home Ec 993.05 or 993.06 or 993.07. Repeatable to a maximum of 15 cr hrs.

998 Research: Thesis G Arr

Research for master's thesis.

Su, Au, Wi, Sp Qtrs.

999 Research: Dissertation G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Horticulture

Office: 152 Howlett Hall, 2001 Fyffe Court, 422-1800.

111 Introduction to Landscape Horticulture U 3

Value of landscape horticulture to the individual and community including culture, identification, and use of plants in planting design. Kozel.

Su, Au, Wi, Sp Qtrs. 3 cl.

170 Wine in Western Culture U 3

The role of wine in western culture with emphasis on the geographic origins, production, and specific uses of wine types. Crean.

Au, Wi, Sp Qtrs. 3 cl.

General Prerequisites for Courses Numbered 200

Unless otherwise indicated, the prerequisites for 200-level courses are 45 cr hrs in collegiate courses, exclusive of ROTC and phys ed.

200 Plant Science in Agriculture U 5

Study of environmental and genetic factors influencing plant growth, and how man can alter these factors to produce economic plants more adequate to his needs. Alban, Geisman, Hartman, Herr and Utzinger.

Au, Wi, Sp Qtrs. 5 cl. Prereq: Biology 100 or Botany 110 or Zoology 110. Not open to students with credit for Agronomy 200. Cross-listed in Agronomy.

202 Fruits and Vegetables for Man U 3

Introduction emphasizing application and appreciation of fruits and vegetables, including origins, pruning and training, and growing practices with commercial systems contrasted with backyard gardening.

Au Qtr. 3 1-hr cl.

203 Horticultural Morphology U 3

A study of horticultural plant materials emphasizing the interpretation of gross plant structures and their development in relation to cultural practices and the environment. Hartman.

Au, Sp Qtrs. 3 cl.

231 Landscape Plants I U 3

A laboratory, field, and discussion course studying trees, shrubs, vines, and ground covers used in landscape plantings.

Au Qtr. 2 cl, 1 2-hr lab. Prereq: Botany 112. Not open to landscape hort majors.

232 Landscape Maintenance U 3

Management of landscape plantings with special emphasis on transplanting, mulching, nutrition, pest control, pruning, physiological disorders, and diagnosing plant problems.

Wi, Sp Qtrs. 3 1-hr cl. Prereq: 231. Not open to landscape hort majors.

233 Landscape Plants II U 3

Landscape characteristics and qualities of selected woody plants, their use, seasonal interest, and environmental suitability.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: 232. Not open to landscape hort majors.

241 Food Preservation U 3

Introduction to the food processing industry; principles involved in the modern methods of assembling, processing, and distribution of food. Gould.

Sp Qtr. 3 cl.

293 Individual Studies U 1-5

Individual studies in areas of fruit, vegetable, and florist crops; landscape horticulture; and processing and technology.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

294 Group Studies U 1-5

Special group studies in areas of fruit, vegetable, and

florist crops; landscape horticulture; processing and technology.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

H299 Plants and Man U 5

The influence and interaction of limiting factors on plant growth with emphasis on principles utilized by man to increase productivity and value of plant products. Geisman and Herr.

Wi Qtr. 4 cl, assigned reading 1 hr. Prereq: 5 cr hrs biological sciences and membership in an honors program or eligibility for membership in an honors program. Not open to students with credit for 200 or Agronomy 200 or H299. Cross-listed in Agronomy.

General Prerequisites for Courses Numbered 300 and 400

Unless otherwise indicated, the prerequisites for 300 and 400-level courses are 90 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified courses numbered 100-399.

321 Indoor Plants U 3

The identification, culture and use of plants for interior decoration in the home, office, public buildings and related locations.

Wi Qtr. 2 cl, 1 1-hr lab arr. Prereq: Botany 112, 200 or Agronomy 200.

415 Plant Propagation U 5

Study of the principles and commercial practices involved in the sexual and asexual propagation of horticultural plants; facilities, equipment, and pathogen-free stock are considered. Fretz.

Au, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: Botany 112. Not open to students with credit for 515.

424 Commercial Floral Design U 2

Introduction to the principles and mechanics of commercial floral design. Robertson.

Sp Qtr. 1 4-hr lab. Prereq: jr or sr standing. Open only to floriculture majors.

431 Herbaceous Ornamental Plants U 5

The identification, culture and landscape use of bulbs, annuals, herbaceous perennials, and garden roses; identification of weeds and turf management is also covered. Staby.

Sp Qtr. 3 cl, 2 2-hr lab. Prereq: Botany 112 and Agronomy 240.

432 Woody Deciduous Plants U 5

A detailed study of deciduous trees, shrubs and vines, their identification, growth habits, culture, adaptation to environmental conditions, uses, combinations, and management in landscape plantings. Kozel.

Au Qtr. 3 cl, 2 2-hr lab. Prereq: Botany 112.

433 Woody Evergreen Plants U 5

Detailed study of narrow and broadleaf evergreens, their identification, growth habits, culture, uses, and management in landscape plantings; winter characteristics of deciduous plants reviewed. Kozel.

Wi Qtr. 3 cl, 2 2-hr lab. Prereq: 432.

434 Use of Woody Plants in the Landscape U 5

Woody plant use for specific landscape function and unusual environmental situations; aesthetic features, cultural characteristics and the landscape use of plants are studied in detail. Kozel.

Sp Qtr. 3 cl, 2 2-hr lab. Prereq: 433.

441 Processing of Fruit and Vegetable Products U 5

Fundamentals essential to commercial processing and utilization of fruits, vegetables, and related food products. Gould.

Wi Qtr. 3 cl, 2 2-hr lab. Prereq: Chem 102 or 122.

442 Quality Attributes of Fruits, Vegetables, and Related Foods U 5

Identifying, evaluating, and controlling quality attributes of fresh and processed fruits, vegetables, and related products as to consumer acceptance, nutrition, and use. Gould.

Sp Qtr. 3 cl, 2 2-hr lab. Prereq: Chem 102 or 122.

450 Principles of Vegetable Crop Production U 5

The production and utilization of vegetable crops with emphasis on environmental factors which influence growing and handling of these crops. Alban.

Sp Qtr. 4 cl, 1 2-hr lab.

461 Principles of Pome Fruit Production U 5

A study of the fundamental principles of pome fruit production with emphasis on recognition and solution of problems according to modern scientific concepts. Hartman.

Au Qtr. 4 cl, 1 2-hr lab. Prereq: 203 or equiv.

462 Principles of Small Fruit Production and Viticulture U 3

A study of small fruit production with emphasis on the recent biological advances from which this technology has evolved. Hartman.

Wi Qtr. 2 cl, 1 2-hr lab. Prereq: 203.

463 Principles of Stone Fruit Production U 2

A study of the fundamental principles of stone fruit production with emphasis on recognition and solution of problems according to modern scientific concepts. Hartman.

Sp Qtr. 1 cl 1 2-hr lab. Prereq: 203 and 461.

489 Horticultural Industries Experience U 1-6

Ten weeks of planned and supervised practical experience in an approved horticultural enterprise, including completion of a special problem with a written report.

Su, Au, Wi, Sp Qtrs. Prereq: Major standing in hort. Repeatable to a maximum of 6 cr hrs. Required for two qtrs for students majoring in landscape hort under agr ind program.

General Prerequisites for Courses Numbered 500

Unless otherwise indicated, the prerequisites for 500-level courses are 15 cr hrs in courses in the same discipline numbered 200 or higher, or 10 cr hrs in courses numbered 200 or higher in the same discipline, plus 10 cr hrs in courses numbered 200 or higher in specified allied disciplines; or baccalaureate degree.

509 Post-Harvest Physiology of Horticultural Crops U G 3

The principles of post-harvest physiology, handling and storage of fruits, vegetables, flowers and ornamentals. Staby.

Au Qtr. 3 cl. Prereq: Botany 431. Not open to students with credit for 609.

521 Greenhouse Environment Control U G 5

Principles and practices of greenhouse operation including construction, heating, cooling, light, temperature, ventilation, moisture, soils and nutrition; identification of selected foliage plants also covered.

Au Qtr. 4 cl, 1 3-hr lab. Prereq: Botany 112. Not open to students with credit for 621.

522 Commercial Floriculture—Potted Plants U G 5

Physiological principles and environmental factors involved in the commercial production of selected flowering and foliage plants.

Wi Qtr. 4 cl, 1 3-hr lab. Prereq: 521. Not open to students with credit for 622.

523 Commercial Floriculture—Cut Flowers U G 5

Physiological principles and environmental factors involved in the commercial production of selected cut flower crops.

Sp Qtr. 4 cl, 1 3-hr lab. Prereq: 521. Not open to students with credit for 623.

524 Commercial Floriculture—Marketing and Management U G 5

Fundamentals of retail florist management and principles and practices in the market distribution of floricultural commodities. Robertson.

Sp Qtr. 4 cl, 1 2-hr lab. Prereq: 521 and Acctg 211. Not open to students with credit for 624.

533 Management of Commercial Nursery Operations U G 5

Detailed consideration of factors involving commercial nursery site selection, production, harvesting and marketing of woody ornamentals and related products. Sydnor.

Sp Qtr. 4 cl, 1 3-hr lab. Prereq: 433, Agronomy 240 or permission of instructor. Not open to students with credit for 633.

543 Processing Technology of Cereal Grains and Related Foods U G 3

Unit processes of milling, baking, extruding, formulating, and utilizing cereal grains and related foods as related to the commercial processing. Peng.

Sp Qtr. 3 cl. Prereq: 441. Not open to students with credit for 643.

546 Beverage and Fruit Drink Processing U G 3

Development, formulation, processing and packaging of beverages and fruit juice drinks including quality control, composition, cost control, marketing and trends. Gould.

Au Qtr. 2 cl, 1 2-hr lab. Prereq: 441 and 442. Not open to students with credit for 646.

550 Greenhouse Vegetable Crops U G 3

A study of the origin and development of the vegetable forcing industry and present-day cultural practices with reference to the more important greenhouse vegetable crops. Alban.

Wi Qtr. 2 cl, 1 2-hr lab. Prereq: 450. Not open to students with credit for 650.

551 Commercial Vegetable Production—Fresh Market Crops U G 3

The culture of the principal vegetable crops, fresh market, including history, plant characteristics, physiology, propagation, climatic and edaphic adaptation and specialized production technology. Alban.

Au Qtr. 3 cl. Prereq: 450. Not open to students with credit for 652.

552 Commercial Vegetable Production—Processing Crops U G 3

The culture of the principal vegetable crops used for processing including physiology, propagation, climate and edaphic adaptations and specific production technology. Kretchman.

Au Qtr. 3 cl. Prereq: 450. Not open to students with credit for 652.

593 Individual Studies U 1-5

Special studies in the fields of fruit crops, vegetable crops, florist crops, landscape horticulture, and processing and technology of fruits, vegetables, and related crops.

Su, Au, Wi, Sp Qtrs. Prereq: Sr standing in hort. Repeatable to a maximum of 10 cr hrs.

H599 Honors Course U 2, 3, or 5

Special studies in the fields of fruit crops, vegetables crops, florist crops, landscape horticulture, and processing and technology of fruits, vegetables, and related products.

Au, Wi, Sp Qtrs. Prereq: Enrollment in honors program.

General Prerequisites for Courses Numbered 600

Unless otherwise indicated, the prerequisites for 600-level courses are 15 cr hrs in courses in the same discipline numbered 300 or higher, or 10 cr hrs in courses numbered 300 or higher in the same discipline, plus 10 cr hrs in courses numbered 300 or higher in specified allied disciplines.

601 Horticultural Plant Breeding U G 3

Plant breeding methods and genetic principles applied to horticultural plant improvement, including fundamentals of seed production, variety evaluation, certification, and maintenance.

Wi Qtr. 2 cl, 1 2-hr lab. Prereq: Genetics 140 or equiv.

602 Pigments and Coloration of Plants U G 3

The major pigments of plants with emphasis on their chemical properties, genetics and changes in the developing, senescing and preserved material. Crean.

Wi Qtr. 3 cl. Prereq: 200 or 299 or Agronomy 200 or permission of instructor.

603 Analysis of Horticultural Plant Materials U G 5

Fundamental principles and techniques of chemical and physical analysis of plant materials. Crean.

Sp Qtr. 2 cl, 3 2-hr lab. Prereq: Chem 102 or equiv. Not open to students with credit for 644 or 511.

610 Weed Control in Horticultural Crops U G 3

A study of environmental and cultural factors which influence weed development in horticultural crops and a review of the principles of chemical and mechanical weed control. Alban.

Sp Qtr. 3 cl. Prereq: 15 cr hr hort and 10 cr hr botany.

611 Tropical and Subtropical Fruit and Vegetable Production U G 3

A study of important tropical and subtropical fruits and vegetables, with emphasis on latest technological advances to achieve optimum quantitative and qualitative yields. Alban and Hartman.

Au Qtr. 3 cl. Prereq: Sr or grad standing, minimum of 20 cr hr biological sciences, and Agronomy 543.

631 Arboriculture U G 5

Environmental factors affecting plant growth and the planting, fertilization, pruning, cabling, and diagnosis

of disorders in commercial arboriculture, city, forestry, park, and industrial grounds maintenance. Sydnor.

Au Qtr. 4 cl, 1 3-hr lab. Prereq: 433; Botany 431; Entomol 460; Plnt Pth 401. Not open to students with credit for 731.

640 Food Regulations and Product Examination U G 5

Food laws, regulations, grade standards, and the technical control of the processed foods, interpretation of laboratory analysis for control of product quality. Gould.

Wi Qtr. 3 cl, 2 2-hr lab. Prereq: 241 and 442. Not open to students with credit for 741.

641 Horticultural Food Processing and Technology U G 5

Unit processes of handling, grading, cleaning, sorting, peeling, pumping, change in form, and filling as related to commercial processing of fruits, vegetables, and related products. Gould.

Su Qtr. 3 cl, 2 3-hr lab. Prereq: 441.

642 Processing of Specialty Horticultural Food Products U G 4

Applications of extracting, filtering, concentration crystallization and food additive use to the production of specialty food products derived from horticultural sources. Crean.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 441.

645 Fermented Plant Product Technology U G 3

Study of commercial practices in the manufacturing of fermented plant products. Geisman.

Au Qtr. 3 cl. Prereq: 441 or equiv, Microbiol 509 or equiv.

647 Technology of Fats and Oils U G 3

Study of the manufacturing, processing, utilization, and quality control of fats, oils and their products. Peng.

Sp Qtr. 3 cl. Prereq: FSN 521 or equiv.

648 Technology of Plant Proteins U G 3

Study of the manufacturing and processing of protein foods from plant origin, and the problems related to their utilization in human foods. Peng.

Wi Qtr. 3 cl. Prereq: Fd Sc&Nu 521 or equiv.

649 Packaging Materials and Methodology U G 3

A discussion of terminology and literature of commercial packaging, principal methods of packaging and principles of selecting packaging materials. Crean.

Wi Qtr. 3 cl. Prereq: 441, 442 and 640 or equiv. Not open to students with credit for 794c.

670 Enology I—Principles and Wine Technology U G 5

Principles and technology involved in making table, dessert, and sparkling wines with attention given to most treatments and fermentation practices. Gallander.

Au Qtr. 2 cl, 2 2-hr lab. Prereq: 442, Microbiol 509 or 601.

671 Enology II—Wine Quality and Examination U G 4

Principles and methods used to examine various wine components which relate to wine quality.

Sp Qtr. 2 cl, 2 2-hr lab. Prereq: 670.

690 Colloquia U G 1

New developments in the horticultural industries will be discussed by experts in their fields.

Au, Wi, Sp Qtrs. Prereq: Sr standing.

694 Group Studies U G 1-5

Special group studies in the fields of fruit, vegetable, florist crops, landscape horticulture, and processing and technology.

Au, Wi, Sp Qtrs. Prereq: Sr or grad standing. Repeatable to a maximum of 10 cr hrs.

General Prerequisites for Courses Numbered 700

Unless otherwise indicated, the prerequisites for 700-level courses are 15 cr hrs in courses in the same discipline numbered 400 or higher, plus additional specified course(s) numbered 600 or higher.

742 Research and Development Technologies in the Food Industries U G 3

Critical review of trends, changes, research and development methods and literature in food processing and technology. Gould.

Wi Qtr. 3 cl. Prereq: Sr standing in the food areas.

743 Enzymes in Horticulture—Food Processing U G 3

Study of the essential changes due to enzymic activities in the processing of different food systems. Peng.

Au Qtr. 2 cl, 1 2-hr lab. Prereq: 441 or equiv; Biochem 511 or 551.

General Prerequisites for Courses Numbered 800 and 900

Unless otherwise indicated, the prerequisites for 800 and 900-level courses are 30 cr hrs in courses in the same discipline, or 20 cr hrs in the same discipline, plus 25 cr hrs in specified allied disciplines.

803 Research Principles and Techniques in Horticulture G 3

The philosophy and components of graduate education with a development of the techniques useful in conducting research in the field of horticulture. Fretz.

Au Qtr. 3 cl.

804 Seminar G 1

Au, Wi Qtrs.

806 Morphological and Anatomical Studies of Horticultural Crops G 3

Effects of environmental factors upon the morphological and anatomical characteristics of selected horticultural crops and the relationship of the quality of the product. Hartman.

Wi Qtr. 2 cl, 1 2-hr lab. Not open to students with credit for 801a and 801b.

811 Plant Nutrition—Macro-Nutrients G 3

Effect of macro-nutrient elements upon the growth and development of horticultural crops; emphasis will be placed upon physiological, biochemical and anatomical plant responses. Fretz.

Au Qtr. 2 cl, 1 2-hr lab. Prereq: Botany 631 or equiv.

812 Plant Nutrition—Micro-Nutrients G 3

Effect of micro-nutrient elements upon the growth and development of horticultural crops; emphasis on physiological, biochemical and anatomical plant responses. Fretz.

Sp Qtr. 2 cl, 1 2-hr labs. Prereq: Botany 631 or equiv.

814 Physiology of Horticultural Plants G 5

The application of physiological concepts to horticultural plant situations; review of applicable literature. Kretchman.

Au Qtr. 5 cl. Prereq: 630 and 631.

815 Post-Harvest Physiology G 3

An in-depth review of the literature pertaining to the physiology and biochemistry of horticultural crops after harvest as influenced by various external and internal factors. Staby.

Wi Qtr. 2 cl, 1 3-hr lab. Prereq: Botany 630, 631 and Biochem 511 or equiv.

841 Advanced Food Processing and Technology G 5

Critical evaluation of new principles and applications of food processing unit operations and technology of food products. Gould.

Au Qtr. 5 cl. Prereq: Grad standing in food areas. Not open to students with credit for 801f or 801g.

897 Interdepartmental Seminar in Natural Resources G 1

See Interdepartmental Seminars.

Au, Wi, Sp Qtrs.

993 Individual Studies G 1-5

Special studies in the fields of fruit, vegetable, florist crops, landscape horticulture, and processing and technology of fruits, vegetables, and related food products.

Su, Au, Sp Qtrs. Repeatable to a maximum of 10 cr hrs.

999 Research Thesis or Dissertation G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Hospital Administration

School of Allied Medical Professions

Office: 543 School of Allied Medical Professions Building, 1583 Perry Street, 422-9708

694 Group Studies U G 1-5

Group studies of special topics within hospital and health services administration.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs.

800 Medical Care Organization G 4

Analysis of arrangements for the organization, financing, and delivery of medical care services. Loeb.

Au Qtr. 4 cl. Prereq: Written permission of instructor.

802 Economic Analysis of Health Services G 3

Applications of economic analysis to health services, with emphasis on the microeconomic behavior of decision units in the health sector. Caswell.

Wi Qtr. 3 cl. Prereq: Permission of instructor. Not open to students with credit for 828.

809 Field Study I: Health Organizations in the Community G 2

Identification and survey of patterns of organization and control of health care institutions; analysis of nature and extent of interrelationships among institutions.

Au Qtr. Prereq: Permission of instructor.

810 Field Study II: Departmental Management G 3

Analysis of departmental and institutional objectives, management functions, interdepartmental relationships, and supervisory styles.

Wi Qtr. 3 cl. Prereq: Permission of instructor. Not open to students with credit for 810.02.

811 Legal Environment of Health Care G 3

Legal environment of health care, including hospital-patient-doctor relationships; labor law and collective bargaining; constitutional law and administrative regulations pertaining to prepayment and planning. Troyer.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

812 Field Study III: Management Problem Analysis G 3

Methods of management decision making, with externship in a local hospital or health agency for intensive study of a management problem.

Sp Qtr. Prereq: 6 cr hrs in hosp admin and permission of instructor.

815 Organization and Management of Hospitals G 3

Analysis of the organization and management of hospitals with emphasis on administrator, medical staff, and board of trustee relationships. Johnson.

Au Qtr. 3 cl. Prereq: Permission of instructor. Not open to students with credit for 810.01.

820 Financing Health Services G 3

Analysis of the sources of financing, both current and future, for health service organizations. Cleverley.

Sp Qtr. 3 cl. Prereq: Acctg 711 or equiv and permission of instructor. Not open to students with credit for 827.

831 Planning for Health Organizations G 3

Description of techniques and methods essential for planning with an emphasis on applications in social technical systems and a special emphasis on health systems. Nutt.

Au Qtr. 3 cl. Prereq: Permission of instructor. Not open to students with credit for 826.

832 Planning for Health Facilities G 3

Analysis of health planning environment; review of trends in planning, design, construction, and financing of hospitals and other health facilities. Lash.

Sp Qtr. 3 cl. Prereq: 831 or permission of instructor.

845 Ambulatory and Comprehensive Medical Care Programs G 3

Analysis of the organization and management of ambulatory and comprehensive medical care programs, including the initiation, maintenance, staffing and financing requirements. Loeb.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

850 Seminar in Hospital Policy and Decision Making G 4

Policy process and methods of decision making; assignment and solution of managerial problems; case studies, with emphasis on strategy and implementation. Johnson.

Wi Qtr. 4 cl. Prereq: 18 cr hrs in hosp admin or written permission of director. Not open to students with credit for 840.

855 Health Care Policy and Politics G 3

Political characteristics of the policies and mechanisms for the provision of personal health services, with emphasis on community, state and federal levels of policy making. Loeb.

Sp Qtr. 2 1½-hr cl.

860 Evaluation in Health and Other Social Systems G 3

Models of evaluation including experimental designs, quasi-designs and case studies with discussion of barriers to effective use of evaluation results in health administration decision-making.

Wi Qtr. 2 1½-hr cl. Prereq: Grad level course in stat or permission of instructor. Not open to students with credit for 870.

861 Behavioral and Normative Decision Approaches G 3

Decisions as made by individuals, groups and organizations comprising the health delivery systems; examination of decision-maker behavior; strategies to improve decisions.

Sp Qtr. 2 2½-hr cl. Prereq: 860 or 870 (Evaluation; or permission of instructor. Not open to students with credit for 870 (Decision-making).

870 Advanced Studies in Hospital Administration G 3

Seminar in special topics in hospital and health services administration with content varying from quarter to quarter. Johnson and Staff.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

Human Nutrition and Food Management

Office: 265 Campbell Hall, 1787 Neil Avenue, 422-4485

110† Food For Your Nutrition U 5

Food selection for the individual as influenced by nutrient needs and cultural, psychological and economic factors.

Au, Sp Qtrs. 5 cl. Not open to students with credit for Home Ec 110.

230 Food Service Systems Management: Introduction U 2

Orientation to field of food service management. Cremer and Hubbard.

Sp Qtr. 2 cl. Not open to students with credit for Home Ec 230.

294 Group Studies U 2, 3 or 5

Selected topics in human nutrition and food management.

Prereq: Open to students who meet dept's stated prereqs. Not open to students with maximum allowable credit for 294.01 or 294.02 or 294.08 or Home Ec 294.01 or 249.02 or 294.08. Repeatable to a maximum of 10 cr hrs.

310 Fundamentals of Human Nutrition U 5

Nutrient and food energy needs of the human biological system throughout the life cycle with consideration of socio-psychological factors. Herr and Mitchell.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 5 cr hrs of biological science. Not open to students with credit for Home Ec 310.

313 Food in Different Cultures U 3

Food practices of selected peoples of the world with consideration of the existing social, cultural, and economic conditions.

Wi Qtr. 3 cl. Prereq: 10 cr hrs of social science. Not open to students with credit for Home Ec 313.

314 Fundamentals of Food U 5

Application of chemical and physical principles to food preparation and use. Joseph.

Au, Wi, Sp Qtrs. 2 cl, 3 2-hr lab. Prereq: 10 cr hrs of chem. Not open to students with credit for Home Ec 314.

413 Food Management for Families U 3

Nutritional, aesthetic, economic and social aspect of planning, purchasing, preparing, and serving food to family groups at different income levels. Holyoak.

Au, Wi, Sp Qtrs. 2 cl, 1 3-hr lab. Prereq: 310 (or Home Ec 310) and 314 (or Home Ec 314). Not open to students with credit for Home Ec 413.

430 Food Service Systems Management: Menu Planning U 3

The menu as a basis for planning, organizing and controlling food service systems. Hubbard.

Au Qtr. 3 cl. Not open to students with credit for Home Ec 430.

431 Food Service Systems Management: Production U 5

Techniques for food quality and cost control; work planning; individual experience in food production and use of equipment. Cremer.

Au, Wi Qtrs. 2 cl, 6 hrs lab, 2 hrs arr. Prereq: 314 (or Home Ec 314). Not open to students with credit for Home Ec 431.

435 Principles of Teaching Applied to Human Nutrition and Food Management U 4

Principles of education for students whose professional work will require knowledge of techniques for teaching others in non-school situations. A. McCormick.

Wi Qtr. 2 2-hr cl. Prereq: 431 (or Home Ec 431). Not open to students with credit for Home Ec 435.

589 Field Work U 3, 5 or 10

Au, Wi, Sp Qtrs. Prereq: Sr standing in Home Ec, 2.25 cumulative point-hour ratio, and written permission of instructor. Not open to students with maximum allowable credit for 589.01 or 589.02 or 589.08 or Home Ec 589.01 or 589.02 or 589.08. Registration 2 qtrs before scheduling.

593 Individual Studies U 2, 3 or 5

Problems in various phases of human nutrition and food management chosen for individual study.

Su, Au, Wi, Sp Qtrs. 1 or more conf. H593 (honors) may be available to students enrolled in School Honors Program or eligible for enrollment. Prereq: Minimum of 6 cr hrs in subject matter of problem with cumulative point-hour ratio of 2.7 or written permission of instructor. Not open to students with maximum allowable credit for 593.01 or 593.02 or 593.08 or Home Ec 593.01 or 593.02 or 593.08. Repeatable to a maximum of 10 cr hrs.

606 Nutrition of Infants and Children U G 3

Food and nutrient needs of children from the embryonic stage through adolescence. Whittle.

Sp Qtr. 3 cl. Prereq: 310 (or Home Ec 310). Not open to students with credit for 616 or Home Ec 616.

610 Advanced Human Nutrition U G 5

Interrelationships of nutrition and human biological functions. Vivian.

Au Qtr. 5 cl. Prereq: 310 (or Home Ec 310), Zoology 232, and Biochem 211. Not open to students with credit for Home Ec 610.

612 Nutritional Therapy U G 3

An introduction to current practices of nutritional therapy with emphasis on the biochemical and physiological rationale for dietary modifications. Mitchell.

Not open to students with credit for 612 or Home Ec 612.

612.01 Nutritional Therapy I

Wi Qtr. 2 cl, 1 2-hr lab. Prereq: 610 or Home Ec 610.

612.02 Nutritional Therapy II

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: 612.01.

615 Food Theory and Application U G 5

Application of experimental methods to problems involved in preparation of foods. Joseph.

Au, Wi, Sp Qtrs. 3 cl, 2 3-hr lab. Prereq: 314 (or Home Ec 314), and Chem 235 or Biochem 211. Not open to students with credit for Home Ec 615.

630 Food Service Systems Management: Purchasing U G 5

Principles and standards for selection of food, equipment, and furnishings; facility design and equipment layout. Cremer.

Sp Qtr. 5 cl. Prereq. or concur: 431 (or Home Ec 431). Not open to students with credit for Home Ec 630.

632 Food Service Systems Management: Operational Integration U G 5

Integration of operational processes and resources for the management of food service systems. Hubbard.

Wi Qtr. 2 2-hr cl, 1 hr arr. Prereq: 431 (or Home Ec 431) and Bus-Mgt 500 (or Bus Admin 500). Not open to students with credit for Home Ec 632.

690 Workshop U G 4

Full time for 3 wks. Prereq: Written permission of instructor. Not open to students with maximum allowable credit for 690.01 or 690.02 or 690.08 or Home Ec 690.01 or 690.02 or 690.08. Repeatable to a maximum of 12 cr hrs.

694 Group Studies U G 2, 3 or 5

Selected topics in human nutrition and food management.

Prereq: Open to students who meet dept's stated prereqs. Not open to students with maximum allowable credit for 694.01 or 694.02 or 694.08 or Home Ec 694.01 or 694.02 or 694.08. Repeatable to a maximum of 10 cr hrs.

711 Nutrition: History U G 3

Persons, discoveries, and methods in the evolution of nutrition as a science and a factor in the control of human welfare. Vivian or Whittle.

Wi Qtr. 3 cl. Prereq: 610 (or Home Ec 610). Not open to students with credit for Home Ec 711.

713† Advanced Food Theory and Application U G 3

Food theories applied to individual investigations in food preparation, preservation, and storage in the home and volume food service. Cremer or Joseph. Su Qtr. 1 2-hr cl, 1 3-hr lab. Prereq: 615 (or Home Ec 615). Not open to students with credit for 813 or Home Ec 813.

730 Advanced Food Service Systems Management: Operational Integration U G 3

Current practices and research in management of food service systems. Hubbard or Cremer. Sp Qtr. 1 2-hr cl. Prereq: 632 (or Home Ec 632). Not open to students with credit for 830 or Home Ec 830.

793 Individual Studies U G 2, 3 or 5

Problems in various phases of human nutrition and food management chosen for individual study. Su, Au, Wi, Sp Qtrs. 1 or more conf. Prereq: Written permission of instructor. Not open to students with maximum allowable credit for 793.01 or 793.02 or 793.08 or Home Ec 793.01 or 793.02 or 793.08. Repeatable to a maximum of 15 cr hrs.

797 Interdepartmental Seminar U G 2-4

See Interdepartmental Seminars.

Not open to students with maximum allowable credit for Home Ec 797. Repeatable to a maximum of 6 cr hrs.

802 Seminar in Human Nutrition and Food Management G 3 or 5

Prereq: 610 (or Home Ec 610), 615 (or Home Ec 615), 632 (or Home Ec 632) or equiv with written permission of instructor. Not open to students with maximum allowable credit for 802 or Home Ec 802. Repeatable to a maximum of 15 cr hrs.

a—Food Management. Su Qtr.*

b—Advanced topics in Human Nutrition and Food Management. Au Qtr.

c—Food. Wi Qtr.†*

d—Human Nutrition. Sp Qtr.

810 Recent Developments in Human Nutrition G 3

Analysis of selected topics in human nutrition with application to current issues. Vivian and Whittle.

Su Qtr. 3 cl. Prereq: 610 (or Home Ec 610). Not open to students with credit for Home Ec 810.

816†* Recent Developments in Food G 3

Analysis of selected topics in food with application to current issues. Cremer and Joseph.

Wi Qtr. 1 2-hr cl. Prereq: 615 (or Home Ec 615). Not open to students with credit for Home Ec 816.

830 Advanced Studies in Nutrition G 3

Su, Au, Wi, Sp Qtrs. 3 or 4 cl. Prereq: 610 or Anml Sc 630 or Pltry Sc 630 or Anml Sc 631 or Dairy Sc 631 or Home Ec 610; Fd Sc&Nu 761 and 762 and 10 grad cr hrs in physiol. Not open to students with credit for Anml Sc 830, Dairy Sc 830 or Pltry Sc 830. Cross-listed in Anml Sc, Dairy Sc and Pltry Sc.

830.01* Energy

Conrad.

Au Qtr.

830.02* Minerals

Cline.

Wi Qtr.

830.03* Proteins and Amino Acids

Mahan, Naber, and Vivian.

Sp Qtr.

830.04†* Vitamins

Naber.

Au Qtr.

830.05†* Lipids

Palmquist.

Wi Qtr.

830.06†* Laboratory Methods in Nutrition

Allred, Mahan, and Vivian.

Sp Qtr.

832†* Recent Developments in Food Service Systems Management G 3 or 5

Analysis of selected topics in food service systems management with application to current issues. Hubbard or Cremer.

Su Qtr. 1-2 cl. Prereq: 632 (or Home Ec 632) and experience in food service management. Not open to students with maximum allowable credit for 832 or Home Ec 832. Repeatable to a maximum of 15 cr hrs.

894 Group Studies G 2, 3 or 5

Selected topics in human nutrition and food management.

Prereq: Open to students who meet dept's stated prereqs. Not open to students with maximum allowable credit for 894.01 or 894.02 or 894.08 or Home Ec 894.01 or 894.02 or 894.08. Repeatable to a maximum of 10 cr hrs.

898 Interdepartmental Seminar in Nutrition G 1

See Interdepartmental Seminars.

899 Interdepartmental Seminar G 1-5

See Interdepartmental Seminars.

Not open to students with maximum allowable credit for Home Ec 899.

993 Individual Studies G 2, 3 or 5

Problems in various phases of human nutrition and food management chosen for individual study.

Su, Au, Wi, Sp Qtrs. 1 or more conf. Prereq: Written permission of instructor. Not open to students with maximum allowable credit for 993.01 or 993.02 or 993.08 or Home Ec 993.01 or 993.02 or 993.08. Repeatable to a maximum of 15 cr hrs.

998 Research: Thesis G Arr

Research for master's thesis.

Su, Au, Wi, Sp Qtrs.

999 Research: Dissertation G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Humanities, College of

Office: 186 University Hall, 230 North Oval Mall,
422-1882

270 Revolutions in American Consciousness U 5

Comparative study of revolutions in American consciousness, designed to explore the influence on national character of selected revolutionary ideas and movements.

Sp Qtr. 5 cl.

280 City and Country in America, 1620-1830 U 5

Study of the interrelationships of European ideas and American environment and the development of city-country tensions in the colonial and early national periods.

Au Qtr. 5 cl. Prereq: Permission of dean.

281 City and Country in America, 1830-1920 U 5

Study of the transformation of American life associated with industrialization and urbanization and the resulting distinction of city and country life.

Wi Qtr. 5 cl. Prereq: Permission of dean.

282 City and Country in America, 1920-1970 U 5

Study of the effects of national urbanization on life styles and values in contemporary American culture.

Sp Qtr. 5 cl. Prereq: Permission of dean.

294 Group Studies U 1-6

Interdisciplinary study under the direct auspices of the College of Humanities involving materials of an interdepartmental or intercollegiate type.

Prereq: Permission of dean. Repeatable to a maximum of 18 cr hrs.

694 Group Studies U G 1-6

Interdisciplinary study under the direct auspices of the College of Humanities involving materials of an interdepartmental or intercollegiate type.

Prereq: Permission of dean. Repeatable to a maximum of 18 cr hrs.

Industrial Design

Office: 374 Hopkins Hall, 128 North Oval Mall, 422-6746

160 Introduction to Industrial Design U 3

Introduction to the rationale of design and systematic design processes; an overview of the profession of industrial design; an introduction to the department's educational program.

Au, Wi, Sp Qtrs. 1 cl, 1 2-hr cl.

250† Studies in Industrial Design U 3

Studies in specified areas in the field of industrial design, with emphasis on particular aspects of product, visual communication, and interior space design problems.

Au Qtr. 3 2-hr labs. Prereq: Permission of instructor.

251 Basic Industrial Design I U 5

Introduction to the theories, methods, and practices of industrial design with primary emphasis on basic visual language and visual encoding practices.

Au Qtr. 5 2-hr labs. Prereq: Ind dsgrn majors; or permission of instructor.

252 Basic Industrial Design II U 5

Application of two- and three-dimensional organizational principles; introduction to visual logic, freehand perspective sketching systems, and basic three-dimensional modeling techniques and materials.

Wi Qtr. 5 2-hr labs. Prereq: 251; or permission of instructor.

253 Basic Industrial Design III U 3**253.01 Industrial Design Practices**

A continuation of 252 with an introduction to three-dimensional structural principles and materials.

Sp Qtr. 3 2-hr labs. Prereq: 252; concur 253.03; or permission of instructor.

253.03 Industrial Design History

A history of industrial design as affected by technology and other factors within the context of our culture.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: 252; concur 253.01; or permission of instructor.

258 Basic Typography U 3

Introduction to the knowledge and skills of typographical design and its corresponding aesthetic, functional, and technological applications and utilizations.

Au, Wi, Sp Qtrs. 1 2-hr cl, 2 2-hr labs. Open only to majors in ind dsgrn and art educ or by permission of instructor.

460 Intermediate Industrial Design I U 5

Au Qtr. 5 2-hr labs.

460.02 Visual Communication Design

Application of, and experimentation with, a variety of materials, processes, and techniques available for use by the visual communicator.

Prereq: 253.01, 253.03; concur 551; or equiv with written permission of instructor.

460.04 Product Design

Design of simple products as a means of introducing systematic methods, sketching, model making, human factors and presentation.

Prereq: 253.01, 253.03; concur 551 and 501; or equiv with written permission of instructor.

460.08 Interior Space Design

Analysis and synthesis of human activity requirements for three dimensional design of simple spaces; drawing, modeling and presentation techniques explored.

Prereq: 253.01, 253.03; concur 551 and 501; or equiv with written permission of instructor.

461 Intermediate Industrial Design II U 5

Wi Qtr. 5 2-hr labs.

461.02 Visual Communication Design

Study and practice of processing information and data with primary emphasis on encoding, detail designing, and specifying the design production.

Prereq: 460.02, concur 553 and 511; or equiv with written permission of instructor.

461.04 Product Design

Emphasis is placed on the refinement of systematic design methods, visualization, detailing and documentation; students are introduced to team working and client requirements.

Prereq: 460.04; concur 553; or equiv with written permission of instructor.

461.08 Interior Space Design

Utilization of a team approach to emphasize broad considerations in interior space projects; strengthening of problem research, conceptualization, modeling, and presentation techniques.

Prereq: 460.08; concur 553; or equiv with written permission of instructor.

462 Intermediate Industrial Design III U 5

Sp Qtr. 5 2-hr labs.

462.02 Visual Communication Design

Study and simulation of the interaction of management, personnel, and production practices as employed in the development of a communication product.

Prereq: 461.02; concur 555; or equiv with written permission of instructor.

462.04 Product Design

Developing of specialized problem solving approaches to more complex product designs which emphasize the refinement of solutions in terms of suitable technology and user consideration.

Prereq: 461.04; concur 555 and 502; or equiv with written permission of instructor.

462.08 Interior Space Design

Design of specialized interior spaces, stressing the interaction of users, space and activity goals with interior space technology.

Prereq: 461.08; concur 555 and 502; or equiv with written permission of instructor.

494 Group Studies U 1-5

Group studies for special topics in industrial design.

Au, Wi, Sp Qtrs. Lec/lab. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

501 Conceptual Drawing for Industrial Design U 3

Principles of creative conceptual drawing and sketching methods used in the design process.

Au Qtr. 3 2-hr cl. Prereq: 253.01, 253.03; En Graph 121 and 122; concur 551 and 460.04 or 460.08; or written permission of instructor.

502 Three Dimensional Design Graphics U 3

Principles of graphic design for product and interior space design.

Sp Qtr. 3 2-hr cl. Prereq: 258; 461.04 or 461.08; 501 and 553 and Photog 203; concur 555 and 462.04 or 462.08; or written permission of instructor.

503 Design Research Practicum U 3

Field research practice demonstrating the relationship of structured research methods to the design process.

Wi Qtr. 2 3-hr cl. Prereq: 555; 660.04 or 660.08; concur 554 and 661.04 or 661.08; or written permission of instructor.

511 Visual Communication Hand Graphics U 3

Advanced laboratory practice in communicating with drawn messages; evaluation and selection of appropriate visual treatments and techniques for medias of print, film, and television.

Wi Qtr. 2 3-hr labs. Prereq: 460.02 and jr standing in visual communication design; concur 553 and 461.02; or written permission of instructor.

512 Film Graphics and Multi-Media Communication U 3

Planning, use, and application of film, audio/visual presentations and machine graphics for the visual communication designer.

Au Qtr. 2 2-hr cl. Prereq: 258, 462.02, 511, 553; Photog 201, 551 and 552; concur 551 and 660.02; or written permission of instructor.

513 Undergraduate Research Practices in Visual Communication U 3

Overview of research approaches and practices in visual communication design which will be applied in the senior year advanced project course.

Wi Qtr. 3 cl. Prereq: 660.02; basic statistics, basic psych and basic sociol; concur 554 and 661.02; or equiv with written permission of instructor.

551 Industrial Design Manufacturing Materials and Processes U 3

Overview of the properties and fabrication principles for materials used in visual communication, interior space and product design.

Au Qtr. 3 2-hr labs. Prereq or concur: 460.02; or 460.04 and 501; or 460.08 and 501; or equiv with written permission of instructor.

552 Industrial Design Communication Practices U 3

An overview of communication methods, techniques and procedures utilized in the various stages of the design process.

Au Qtr. 2 cl, 1 2-hr lab. Prereq or concur: 660.02, 660.04 or 660.08; or equiv with written permission of instructor.

553 Industrial Design Presentation Techniques U 3

A general overview of two and three dimensional visualizing techniques utilized by the industrial design profession in informative and/or persuasive presentations.

Wi Qtr. 1 2-hr cl, 1 2-hr lab. Prereq or concur: 461.02 and 511; or 461.04 or 461.08; or written permission of instructor.

554 Human and Environmental Systems Design U 3

Overview of the social/behavioral/physical nature of man and his interaction with the environment as interpreted by the industrial designer.

Wi Qtr. 2 cl, 1 2-hr lab. Prereq or concur: 661.04 and 503; or 661.08 and 503; or 661.02 and 513; or written permission of instructor.

555 Design Methodology U 3

Introduction to and application of qualitative and quantitative methodology useful in a problem solving process.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq or concur: 462.04 and 502; or 462.08 and 502; or 462.02; or written permission of instructor.

560 Design for Special Users U 3

Special problems focusing upon the needs of infirm, handicapped and aged people in relationship to environments and products.

Sp Qtr. Arr. Prereq: Jr or sr standing in ind dsgn or occ ther, or written permission of instructor.

570 Visual Communication Layout Design U G 3

A workshop for non-majors in planning and producing printed materials; various technique, media, and processes.

Sp Qtr. 2 2-hr cl.

653 Space Enclosure Systems U G 4

Studies in space lattice development and variables of form and proportion of packing cells directed toward application in packaging, space frames, partitioning, and compartment design.

Sp Qtr. 1 cl, 3 lab hrs. Prereq: Sr or grad standing, permission of instructor. Repeatable to a maximum of 12 cr hrs.

656 Industrial Design Professional Practices U G 3

Investigation of the administrative and legal aspects of the design profession contrasting the private firm with corporate and free-lance types of practice.

Sp Qtr. 1 2-hr cl, 1 1-hr cl. Prereq: 661.02 or 661.04; or 661.08 or graduate standing in ind dsgn program.

660 Advanced Industrial Design I U G 5

Au Qtr. 5 2-hr labs.

660.02 Visual Communication Design

Advanced study of the encoding, transmitting, production, and diffusion practices of visual communication design.

Prereq: 462.02; concur 552 and 512; or equiv with written permission of instructor.

660.04 Product Design

Design of products and product systems for complex functions; emphasis is on extending design consideration to include detailing, mock-ups, prototypes, testing and servicing.

Prereq: 462.04; concur 552; or equiv with written permission of instructor.

660.08 Interior Space Design

Design of multi-unit interior spaces emphasizing the understanding of their relationship to each other and the users; consideration of detailing production and specifying.

Prereq: 462.08; concur 552; or equiv with written permission of instructor.

661 Advanced Industrial Design II U G 5

Wi Qtr. 5 2-hr labs.

661.02 Visual Communication Design

An in-depth study of selected visual communication design concepts and practices as applied to the development of communication products and product systems.

Prereq: 660.02; concur 554 and 513; or equiv with written permission of instructor.

661.04 Product Design

Introduction of field research experience and interdisciplinary expertise to the design of products and product systems, team approach; taught in conjunction with a research practicum.

Prereq: 660.04; concur 554 and 503; or equiv with written permission of instructor.

661.08 Interior Space Design

Team application of field research techniques and interdisciplinary knowledge to the design of complex interior spaces taught in conjunction with a research practicum.

Prereq: 660.08; concur 554 and 503; or equiv with written permission of instructor.

662 Advanced Industrial Design III U G 5

Sp Qtr. 5 2-hr labs.

662.02 Visual Communication Design

Continuation of applied practice in professional visual communication emphasizing communication, systematic planning, and manufacturing.

Prereq: 661.02; concur 656; or equiv with written permission of instructor.

662.04 Product Design

Product design thesis project; students are to demonstrate their proficiency and grasp of previous subject matter in a project approved by the instructor; portfolio development.

Prereq: 661.04; concur 656; or equiv with written permission of instructor.

662.08 Interior Space Design

Interior space thesis project; students are to demonstrate their proficiency and grasp of previous subject matter in a project approved by the instructor; portfolio development.

Prereq: 661.08; concur 656; or equiv with written permission of instructor.

670 Portfolio Organization U G 3

Function and value of a professional portfolio; generation of components for a personal portfolio with emphasis on content, format, and application.

Au Qtr. 2 2-hr cl. Prereq: Sr standing in ind dsgn or written permission of instructor. Repeatable to a maximum of 15 cr hrs.

671 Photo Graphics U G 3

An experimental photo workshop in techniques of manipulating existing images to create new visual ideas, emphasizing individual exploration; discussions and critiques.

Sp Qtr. 2 2-hr cl. Prereq: Permission of instructor.

685 Field Work in Industrial Design U G 3-10

Field application of industrial design in a capacity requiring a close working relationship with a professional environment.

Au, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

690 Colloquium in Industrial Design U G 1-5

Intensive presentation of special-interest material related to the practice of industrial design.

Sp Qtr. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

692 Workshop in Industrial Design U G 1-5

Intensive practical involvement in activities of direct interest to the profession of industrial design.

Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

693 Individual Studies U G 2-5

Advanced study for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 45 cr hrs.

694 Group Studies U G 2-5

Group studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

695 Departmental Seminar in Industrial Design Theory U G 3-5

Critical investigation of a current topic of significance in the field of design theory, through group discussion and presentation of research findings.

Au, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

696 Departmental Seminar in Industrial Design Practice U G 3-5

Critical investigation of a current topic of significance in the field of design practice, through group discussion and presentation of research findings.

Au, Wi Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

697 Departmental Seminar in Industrial Design Methodology U G 3-5

Critical investigation of a current topic of significance in the field of design methodology, through group discussion and presentation of research findings.

Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

698 Study Tour in Industrial Design U G 5-15

First-hand knowledge of industrial design practice, designers and cultural environment abroad with meetings, discussion, observations, documentation concerning aspects of international product and visual communication design.

Su, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

699 Departmental Seminar in Industrial Design Philosophy U G 3-5

Critical investigation of a current topic of significance in the field of design philosophy, through group discussion and presentation of research findings.

Wi Qtr. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

770 Communication Practices Related to Industrial Design U G 3

An overview perspective of the variable components and methods related to the study and analysis of the communication process as applied to industrial design.

Au Qtr. 2 2-hr cl.

785 Orientation to Graduate Studies in Industrial Design U G 3

Overview of current and future trends in industrial design; professional organizations and publications; faculty interests and research; available resources; requirements of graduate level study.

Au Qtr. 1 2-hr cl, 1 1-hr cl.

786 Design Research and Inquiry U G 3

Design as a mode of inquiry, including examination of traditional and post-traditional approaches and emphasizing general problem-solving as a goal-directed, value-laden activity.

Wi Qtr. 2 2-hr cl. Prereq: 785.

795 Departmental Seminar in Industrial Design Research Principles and Techniques U G 3-5

Advanced work in special problems related to methods and procedures of research in industrial design.

Au Qtr. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

797 Interdepartmental Seminar U G 1-5

Interdisciplinary knowledge and problems examined and discussed in the context of shared concerns.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

894 Group Studies G 1-5

Group studies for students in specialized programs.

Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

899 Interdepartmental Seminar G 1-5

Interdisciplinary knowledge and problems examined and discussed in the context of shared concerns.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

950 Research Problems in Design G 3-5

Su, Au, Wi, Sp Qtrs. Repeatable to maximum of 45 cr hrs.

993 Individual Studies G 1-5

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 45 cr hrs.

998 Research in Design: Thesis G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

Industrial and Systems Engineering

Office: 210 Baker Systems Engineering Building, 1971 Neil Avenue, 422-6041

203 Foundry Practice U 3

Lecture and laboratory coverage of casting technology; bench and machine molding; core making; melting and pouring; cleaning and surface finishing of castings.

Sp Qtr. 2 cl, 4 lab hrs. Prereq: 2nd yr standing in education or equiv with permission of chairman. Not open to students in ind eng; not open to students with credit for 201 or 312. Safety glasses must be worn in laboratory.

204 Machine Shop Practice U 5

Lecture and laboratory practice on basic machine tools; emphasis on development of skills necessary for the industrial arts teacher at the secondary level.

Au Qtr. 2 cl, 8 lab hrs. Prereq: 2nd yr standing in education or equiv with permission of chairman. Not open to students in ind eng; not open to students with credit for 202 or 312. Safety glasses must be worn in laboratory.

294 Group Studies U 1-5

Students are given an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

300 Introduction to Quantitative Analysis of Management Systems U 4

Develops a philosophical basis for conceptualizing systems problems. Introduces "classical" models of linear programming, waiting lines, inventory control, forecasting, and optimization and simulation techniques.

Au, Sp Qtrs. 4 cl. Prereq: Statist 425.

303 Introduction to Manufacturing and Human Performance Systems U 4

Provides an historical perspective of systems engineering. Introduces "classical" problems in economic decision analysis, quality control, organizational behavior and design, and methods and time standards.

Au, Sp Qtrs. 4 cl. Prereq: Stat 425; prereq or concur Stat 426.

311 Manufacturing Engineering I U 4

Fundamentals and interrelationships of the principal manufacturing processes; principles and characteristics illustrated with related laboratory demonstrations.

Au, Wi, Sp Qtrs. 3 cl, 3 lab hrs. Prereq: 2nd yr standing in engineering or written permission of instructor. Safety glasses must be worn in laboratory¹.

312 Manufacturing Laboratory U 3

Hands-on experience in both tool room and production manufacturing operations in casting, heat treating, welding, and machining processes.

Wi, Sp Qtrs. 8 lab hrs. Prereq: 311 or equiv with written permission of instructor. Safety glasses must be worn in laboratory¹.

313 Manufacturing Engineering II U 3

Aspects of manufacturing engineering; emphasis on economics of process choice, production planning, estimating, inspection, and scheduling. Consideration of metal and non-metallic materials.

Sp Qtr. 3 cl. Prereq: 311 or equiv or written permission of instructor.

389 Junior Inspection Trip U 1

A group visit to various industrial plants; students must register for the course at the beginning of spring quarter.

Sp Qtr. Prereq: Major standing in ind eng.

406 Industrial Quality Control U 4

The application of probability theory, statistics, and control theory to problems in product inspection and process control; economic evaluation of quality control techniques.

Au, Wi Qtrs. 4 cl. Prereq: 303 for ind eng majors; written permission of instructor for non-majors.

485 Practical Experience in an Industrial Organization U 4

To be obtained in some engineering or industrial organization; prior advisor approval and final report required.

Au Qtr. 10 wks during Su between 3rd and 4th yrs. Prereq: Majors in ind eng only.

501 Work Systems Analysis and Measurement U G 3

Analysis of work content; measurement of the performance of man-machine systems; establishment of standards for the evaluation of work.

Au, Wi Qtrs. 2 cl, 1 2-hr lab. Prereq: 406 or equiv.

502 Work Systems Planning and Evaluation U G 3

The evaluation and planning of man-machine systems experiments.

Wi, Sp Qtrs. 2 cl, 1 2-hr lab. Prereq: 501.

503 Work Systems Design U G 3

Workplace, and control and display design; integrating models of man in man-machine systems through design problems.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: Written permission of instructor.

504 Engineering Economic Analysis U G 3

Economic analysis of engineering projects and methods of operation. The analysis of public

investments, and introduction to the analysis of engineering decisions.

Wi, Sp Qtrs. 3 cl. Prereq: 3rd yr standing or written permission of instructor.

505 Production Engineering U G 4

Production tooling, numerical control of machine tools, and material specifications.

Wi Qtr. 2 cl, 6 lab hrs. Prereq: 311.

506 Design of Production Systems U G 3

Integration of the methods and analytical techniques of industrial engineering into the design of a complete production system.

Au, Sp Qtrs. 3 cl. Prereq: 4th yr standing and written permission of instructor.

508 Industrial Practice in Systems Design U G 2

Conducting an analysis of an actual systems problem in a local industrial plant. Involves data collection, problem definition, exploration of alternatives, recommendation and justification of a proposed system design.

Au, Sp Qtrs. 2 2-hr lab. Prereq: 4th yr standing and written permission of instructor.

531 Tool Engineering U 3

The design of tools, jigs, and fixtures; the basic elements of fixture design, such as form, locating points, clamping devices, and the use of standardized parts. Kibbey.

Au Qtr. 2 cl, 4 lab hrs. Prereq: 311.

534 Principles of Industrial Engineering U G 4

A survey of operations methods used in industry including optimization, probability and statistics, waiting line models, quality control, simulation models, and scheduling methods.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 3rd yr standing or equiv with written permission of instructor. Not open to students in ind eng.

610 Planning of Engineering Experiments U G 3

Study of the activities involving the planning of industrial and research experiments; emphasis on strategic questions such as budget, material availability and time constraints. Neuhardt.

Sp Qtr. 3 cl. Prereq: Statist 426 or 525 or 521.

620 Computer Application in Industrial Process Control U G 3

Provides an introduction to evaluation and design of practical industrial control systems with emphasis on real time computer control of discrete processes. Miller.

Wi Qtr. 2 1-hr cl, 1 2-hr lab. Prereq: 649, 650, or equiv with written permission of instructor.

649 Quantitative Design Methods in Systems Engineering I U G 5

Model formulation and solution methods for system design problems with emphasis on matrix and vector space methods for static and dynamic systems. Miller.

Au, Wi Qtrs. 5 cl. Prereq: Math 254 or equiv.

650 Quantitative Design Methods in Systems Engineering II U G 3

Use of mathematical techniques; including finite calculus, Fourier analysis, and assorted transforms in the analysis of industrial engineering systems. Giffin.

Wi Qtr. 3 cl. Prereq: Statist 426 or equiv.

¹ Prescription lenses may be ordered through the Optometry Clinic, Optometry Building, or through any registered optometrist.

651 Optimization for Industrial and Systems Engineers U G 4

Techniques for formulation and solution of deterministic optimization problems. Methods include linear programming, non-linear programming and Kuhn-Tucker theory, surface-search techniques, and dynamic programming. Mount-Campbell.

Au, Sp Qtrs. 4 cl. Prereq: Math 254 or equiv with written permission of instructor. Not open to students with credit for 656 or 710.

652 Analysis of Inventory Systems U G 3

Mathematical analysis applied to single stage inventory systems using both deterministic and probabilistic models. Giffin.

Sp Qtr. 3 cl. Prereq: Stat 426 or equiv.

653 Engineering Data Analysis U G 3

Graphical and other special techniques for estimating parameters and testing goodness of fit of non-normal distributions to engineering data.

Wi Qtr. 3 cl. Prereq: 406 or Stat 521 or 525 or equiv with written permission of instructor.

654 Simulation of Complex Systems U G 5

Introduction to the analysis of systems via discrete, continuous, and combined discrete-continuous computer simulation models. Generation of random variables. Clark.

Au Qtr. 5 cl. Prereq: Stat 426, En Graph 200, or CIS 240 or 241; or permission of instructor.

655 System Reliability and Availability U G 3

Prediction of system reliability and availability, life cycle costing, methods for analyzing system design concepts from the viewpoint of reliability and availability.

Sp Qtr. 3 cl. Prereq: Stat 426 or permission of instructor. Offered every other yr in odd yrs.

656 Production Programming U G 4

Mathematical formulation and solution of problems of scheduling, inventory control, and logistics using linear programming methods. Mount-Campbell.

Au Qtr. 4 cl. Prereq: 649 or Math 571 or equiv with written permission of instructor. Not open to students with credit for 507.

660 Quantitative Health Systems Management Methods U G 3

A survey of operations research methods applied to health delivery. Includes model design and analysis and application projects in area hospitals.

Wi Qtr. 3 cl. Prereq: 4th yr standing in ind eng or 534 or equiv with written permission of instructor.

662 Introduction to Applied Decision Analysis U G 3

Introduction to decision analysis and its application. Deals with modern utility theory and the application of this theory to engineering decisions under risk. Morris.

Au Qtr. 3 cl. Prereq: Stat 425 or equiv with written permission of instructor.

665* Systems Engineering Analysis of the Criminal Justice System U G 3

Techniques of systems analysis applied to the criminal justice system. Interdisciplinary approach combines social and engineering sciences in a highly relevant area of application. Bishop.

Sp Qtr. 3 cl. Prereq: 3rd yr standing.

666 Design, Analysis, and Control of Manufacturing Systems U G 3

Applications of mathematical modeling to manufacturing; modeling of the operating characteristics of various production-inventory systems, with emphasis on their relationship to planning and control. Wilhelm.

Wi Qtr. 3 cl. Prereq: 311 or equiv with written permission of instructor.

671 Industrial Accident Prevention and Control U G 3

Industrial safety practices; OSHA; models of accident phenomena; measurement, inspection, and control of unsafe behavior and conditions; design of loss control programs. Student projects. Rockwell.

Au Qtr. 3 cl. Prereq: 501 or equiv with written permission of instructor.

672 Analysis and Design of Workplace Environments U G 4

Measurement of environmental parameters including noise, heat, gases, particulates, and light, and their effect on human productivity; design of engineering controls. Laboratory includes industrial surveys. Rockwell.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 501 or equiv with written permission of instructor.

673 Analysis and Design of Man-Machine Systems U G 3

Methodology for design of man-machine systems. Emphasis on the incorporation of user goals and satisfactions in the design of systems. Smith.

Au Qtr. 3 cl. Prereq: 3rd yr standing in engineering, admin sci, or industrial design.

689 Senior Laboratory U 3

Students pursue independent laboratory project of up to two quarters duration. Proposals must be approved by a faculty member prior to registration for the course.

Prereq: Sr standing in ind eng. Repeatable to a maximum of 6 cr hrs.

693 Individual Studies in Industrial Engineering U G 1-6

Designed to give the advanced students an opportunity to pursue special studies not offered in fixed curricula.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 18 cr hrs.

694 Group Studies in Industrial Engineering U G 1-6

Advanced topics in the various phases of industrial engineering.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 23 cr hrs.

701 Arbitration of Industrial Engineering Disputes U G 3

Case studies in the arbitration of technical disputes involving incentive standards, job evaluation, crew size, line balancing, etc. Smith.

Sp Qtr. 3 cl. Prereq: 501, or 534, or equiv with written permission of instructor.

710 Optimization in Operations Research U G 3

Non-linear programming including Kuhn-Tucker saddle point and stationary point conditions, primal algorithms, penalty and barrier algorithms, elementary non-linear duality, and dynamic programming.

Wi Qtr. 3 cl. Prereq: 656 or equiv with written permission of instructor.

750 Advanced Studies in Industrial Engineering U G 3

Au, Wi, Sp Qtrs. Prereq: 4th yr standing and permission of instructor. Repeatable to a maximum of 24 cr hrs; subdivisions not repeatable. The student must register for specific classes in areas as indicated below, and may register for more than one at a time.

750.01 Job Evaluation and Systems Performance Measurement**750.03 Industrial Applications for Statistics****750.04 Discrete-System Analysis and Control****750.06 System Programming and Optimization****750.07 Contemporary Problems in Plant Layout and Design****750.09 Forecasting and Estimating****750.11 Organization of Industrial Engineering Functions****750.12 Production Engineering****754†* Advanced Simulation Design and Experimental Procedures U G 3**

Variance reduction, experimental procedures, estimation of the variance of a time series average, comparison and ranking of alternatives, continuous simulation of discrete event processes. Clark.

Wi Qtr. 3 cl. Prereq: 654 or equiv with written permission of instructor.

755 Application of Benefit-Cost Analysis U G 3

Multiple criteria decision making; application of benefit-cost analysis, cost-effectiveness analysis, and multi-attribute decision theory. Clark.

Wi Qtr. 3 cl. Prereq: 662 and Econ 200 or equiv with written permission of instructor.

760 Basic Concepts of Systems Theory U G 3

Study of formal concepts of systems theory including general models of systems, abstract dynamic systems, the concept of state, goal seeking, and decision making systems. Miller.

Au Qtr. 3 cl. Prereq: 649 or equiv with written permission of instructor.

762 Applied Decision Analysis U G 3

Exploration of strategies for translating decision analyses, staff studies, and engineering decisions into practice; examination of available data in psychology, sociology, and organizational analysis. Morris.

Au Qtr. 3 cl. Prereq: 662, Stat 425 or equiv with written permission of instructor.

772 Decision Analysis U G 3

Introduction to Bayesian decision analysis and its applications. Morris.

Wi Qtr. Prereq: 662. Not open to students with credit for 862.

782 Design of Decision Networks U G 3

Design of networks involving multiple, interacting decision makers including problems of complementarity, coordination, learning, and decentralization. Morris.

Sp Qtr. 3 cl. Prereq: 662. Not open to students with credit for 845.

796 Interdepartmental Seminar on Urban Transportation U G 1-5

See Interdepartmental Seminars.

797 Interdepartmental Seminars U G 1-5

See Interdepartmental Seminars.

811 Methods Engineering G 3-12

Advanced work in one or more special phases of time study, motion study, job evaluation, wage analysis and payment systems, and speed and effort rating; the viewpoint of unions, and problems arising from labor-management relationships.

Su, Au, Wi, Sp Qtrs. Prereq: 501 and 502 or equiv with written permission of instructor.

812 Advanced Systems Design G 3

Advanced work in the analysis and design of production and logistic systems. Giffin.

Su Qtr. Prereq: 650 and 652, or permission of instructor.

813 Advanced Queuing Theory G 3

Mathematical analysis and design of waiting line systems emphasizing transient solutions, general arrival and service distributions, and priority queues and networks of queues. Giffin.

Au Qtr. 3 cl. Prereq: 650 and 843 or equiv with written permission of instructor.

814* Stochastic Processes Used in Systems Engineering G 3

Application of Markov, renewal, and stationary processes in systems engineering, spectral representations; transform methods; digital computer methods. Clark.

Au Qtr. 3 cl. Prereq: 650 or 843 or equiv with written permission of instructor.

815 Estimation of System Parameters from Time Series Data G 3

Estimation of parameter values for stochastic process models used in systems engineering, analysis of trends, forecasting, spectral analysis of time-series data, computer methods.

Wi Qtr. 3 cl. Prereq: 843 or 814 or equiv with written permission of instructor. Offered in even yrs.

821 Problems in Production Engineering G 3-12

Advanced work in one or more phases of production engineering involving problems in production design, equipment planning, tool design, and quantity and quality control. Kibbey.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor.

828 Advanced Studies in Plant Design and Materials Handling G 3-12

Advanced work in one or more special phases of plant design and materials handling.

Su, Au, Wi, Sp Qtrs. Prereq: 506.

830 Mathematical Programming: Linear G 3

Convex and concave problems, global solutions, extreme point solutions, degeneracy, the Simplex methods, duality, complementary slackness, sensitivity analysis, parametric programming, and applications.

Au Qtr. 3 cl. Prereq: Math 571 or equiv or permission of instructor.

831 Mathematical Programming: Nonlinear G 3

Convex sets, convex functions, saddle point optimality criteria, the Fritz John and Kuhn-Tucker conditions, sensitivity and parametric results, applications, and an introduction to algorithms.

Wi Qtr. 3 cl. Prereq: 830, or Math 571 and permission of instructor.

**832 Mathematical Programming:
Advanced Nonlinear G 3**

Wolfe/Falk duality, conjugate/geometric duality, applications of quality (e.g., geometric programming, quadratic programming, location problems, decomposition).

Sp Qtr. 3 cl. Prereq: 831.

**833 Optimization Methods
for Large Systems G 3**

Methods for the solution of large optimization problems including decomposition, generalized linear programs, relaxation methods, and primal and dual hierarchical decompositions.

Wi Qtr. 3 cl. Prereq: 710 or 831 or equiv with written permission of instructor. Offered odd yrs only.

834 Integer Optimization Methods G 3

Methods used in the solution of applied optimization problems which contain integer variables. Content emphasizes general properties and use of common methods.

Au Qtr. 3 cl. Prereq: 656 or 830 or Math 671 or equiv with written permission of instructor. Offered in even yrs only.

**835 Product Development
Experimentation G 3**

Application of linear statistical models to industrial engineering experimentation with emphasis on resource constrained investigations. Neuhardt.

Au Qtr. 3 cl. Prereq: 842 and Stat 645 or equiv with written permission of instructor. Offered alternate yrs.

836 Product Development Analysis G 3

Application of multivariate statistics to problems of industrial experimental planning and analysis; multiple responses, product profile analysis, multivariate quality control. Neuhardt.

Sp Qtr. 3 cl. Prereq: 842 and Stat 525 or equiv with written permission of instructor. Offered alternate yrs.

837 Multilevel Systems Theory G 3

Examination of the structure of hierarchical systems including problems of decomposition and co-ordination. Miller.

Sp Qtr. 3 cl. Prereq: 760 and permission of instructor.

842 Operations Research I G 3

Introduction to the nature and problems of operations research and the study of actual case histories in the field.

Au, Wi Qtrs. 3 cl. Prereq: Calculus, probability theory and statistical methods, and permission of instructor.

843 Operations Research II G 3

The position of the model in operations research and the study of the important techniques and formal approaches to research problems.

Wi, Sp Qtrs. 3 cl. Prereq: 842.

844 Operations Research III G 3

Consideration of topics in operations research including research methodology in the various sciences, and the conduct of actual operations research investigations.

Sp Qtr. 3 cl. Prereq: 843.

**851 Personnel Research in Engineering
Industries G 3-12**

Advanced work in one of the several phases of personnel management in engineering industries.

Su, Au, Wi, Sp Qtrs. Prereq: 750.01 and 750.11 or equiv with written permission of instructor.

**861 Research in Decision
Processes G 3-12**

Advanced work in decision theory and processes including criterion research, decision making under uncertainty and in conflict situations, and gaming techniques. Morris.

Au, Wi, Sp Qtrs. Prereq: Written permission of instructor.

863 Dynamic Programming G 3

Theory, methodology, and application of dynamic programming. Bishop.

Wi Qtr. Prereq: 651 or 710 or equiv with permission of instructor.

864 Optimization of Dynamic Systems G 3

Study of theory and methodology for optimum control of dynamic systems (sequential decision systems); included are calculus of variations, Pontryagin Maximum Principle, and associated approaches. Miller.

Wi Qtr. 3 cl. Prereq: 649 or equiv with written permission of instructor.

**866 Programming and Control
Research G 3-12**

Advanced work in the several phases of programming and control theory; consists primarily of application of mathematical methods to the formulation and solution of process programming and control problems. Miller.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor.

**871 Man-Machine Systems
Research G 3-12**

Advanced work in special research topics in man-machine systems. Rockwell and Smith.

Au, Wi, Sp Qtrs. Prereq: 672 or 673.

**874 Urban Transportation Network
Analysis G 5**

Network representation methods; minimum-path trees; bushes; traffic assignment algorithms and their performance; trip distribution models; combined approaches; UMTA Transportation Planning System (UTPS); new directions.

Sp Qtr. 4 cl, 1 2-hr lab. Prereq: 843. Not open to students with credit for Civil En 874. Cross-listed in Civil En.

**875 Human Factors Engineering in
Vehicular Control G 3**

Characteristics and limitations of the human controller of air craft or surface vehicles, design and evaluation of control aids, and human adaptation to control dynamic changes. Rockwell.

Sp Qtr. Prereq: 672 or 673.

881 Seminar in Industrial Engineering G 2

Au, Wi, Sp Qtrs. Repeatable to a maximum of 6 or hrs.

899 Interdepartmental Seminar G 1-5

See Interdepartmental Seminars.

Su, Au, Wi, Sp Qtrs.

**999 Research in Industrial
Engineering G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Interdepartmental Seminars

796 Interdepartmental Seminar in Urban Transportation U G 1-5

Lectures and discussions by faculty and guest speakers on topics related to urban transportation problems, issues, and new approaches to solutions. Term paper required. Given cooperatively by Civil Engineering and Industrial and Systems Engineering. Clark, Godfrey, and Nemeth.

Au, Wi, Sp Qtrs. Prereq: Sr standing or permission of instructor. Repeatable to a maximum of 6 cr hrs.

797 Interdepartmental Seminars U P G 1-5

Two or more departments may collaborate in presenting seminars in subjects of mutual interest; topics to be announced.

Repeatable by permission.

890 Interdepartmental Seminar in Developmental Biology G 2

Students will present oral reports and lead discussion on research progress in specific areas of developmental biology; given cooperatively by Botany, Genetics, Microbiology, and Zoology.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 12 credit hours.

891 Interdepartmental Seminar in Environmental Biology G 2

Selected topics treating the environmental aspects of organisms, populations, and ecosystems as they may relate to time, space, and human activities; given cooperatively by Botany, Entomology, Microbiology, and Zoology.

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs.

896 Interdepartmental Seminar in Polar and Alpine Studies G 1-3

A seminar on selected topics involving anthropology, biology, climatology, exploration, geology, glaciology, microbiology, and soils; given cooperatively by the Institute of Polar Studies, Biological Sciences, and the following departments: Agronomy, Anthropology, Botany, Civil Engineering, Entomology, Geography, Geology and Mineralogy, Microbiology, and Zoology.

Sp Qtr. 1-3 hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

897 Interdepartmental Seminar in Natural Resources G 1

A seminar in natural resources conservation; given cooperatively by the School of Natural Resources and the following departments: Agricultural Economics and Rural Sociology, Agricultural Engineering, Agronomy, Botany, Entomology, Geography, Horticulture, Microbiology, Plant Pathology, and Zoology.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 9 cr hrs.

898 Interdepartmental Seminar in Nutrition G 1

A seminar in nutrition and in related fields of food technology; given cooperatively by the following departments: Animal Science, Botany, Dairy Science, Food Science and Nutrition, Horticulture, Human Nutrition and Food Management, Plant Pathology, and Poultry Science.

Sp Qtr.

899 Interdepartmental Seminars G 1-5

Two or more departments may collaborate in presenting seminars on subjects of mutual interest; topics to be announced.

Repeatable by permission.

International Studies

Office: 308 Dulles Hall, 230 West 17th Avenue, 422-9660

230 Introduction to the Soviet Union U 5

A survey of the land, people, history, politics, social institutions, literature, and arts of the Soviet Union, conducted by members of several departments. Adams.

Su, Au, Wi, Sp Qtrs. 5 cl.

231 Introduction to Eastern Europe since World War II U 5

Survey of the land, people, history, politics, social institutions, literature, and arts of Eastern Europe since World War II. Walters.

Au Qtr. 5 cl.

235 Introduction to China and Japan U 5

Interdepartmental survey of contemporary Asian civilization; geographic and racial background, historical and cultural heritage, social organizations, economic and political problems, and international relations. Richardson.

Sp Qtr. 5 cl.

240 Introduction to Latin America U 5

Interdepartmental survey of Latin American societies, anthropology, economics, history, literature, geography, and agriculture. Graham.

Sp Qtr. 5 cl.

245 Introduction to the Modern Middle East U 5

Interdepartmental survey of the land, people, history, politics, religions, philosophy, social institutions, economic development, literature, and the arts conducted by members of several departments. Findley.

Wi Qtr. 5 cl.

250 Introduction to Africa U 5

Interdepartmental survey of the land, people, history, politics, social institutions, economic development, literature, and the arts conducted by members of several departments. Arewa.

Wi Qtr. 5 cl.

294 Group Studies U 1-5

Groups of students are offered the opportunity to pursue the interdepartmental study of special topics.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor.

501 Selected Problems in International Studies U G 5

Panel discussions, informal conferences, and a reading and research program arranged to meet the special needs of those enrolled. Stewart.

Wi Qtr. 2 cl. Open only to int stud majors or students with equiv preparation.

693 Individual Studies U G 1-5

Designed to give able students an opportunity to pursue a special course of study not otherwise available to them.
Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 5 cr hrs.

694 Group Studies U G 3-5

Designed to give groups of students an opportunity to pursue special studies not otherwise offered.
Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor.

H783 Honors Course U 3-5

Informal conferences to allow full scope of the initiative of the student. A special topic is assigned to each student. The results are tested by conferences and special reports.

Su, Au, Wi, Sp Qtrs. Prereq: Sr standing and 40 cr hrs in the social sciences including 15 cr hrs in courses acceptable for a major in Internat S, with a grade of A in at least half of these major courses and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Repeatable to a maximum of 15 cr hrs. Failure to receive a mark of S in this course is a disqualification for special honors.

Italian

Office: 248 Dieter Cunz Hall of Languages, 1841 Millikin Road, 422-5842

101 Elementary Italian U 5

Elements of Italian grammar with oral and written exercises; attention to ear training and oral practice; elementary reading based on Italian geography, history, and customs.

Su, Au, Wi, Sp Qtrs. 5 cl.

102 Elementary Italian U 5

The elements of Italian grammar with abundant oral and written exercises; development of conversational skill; reading, vocabulary building, attention to Italian idioms; modern Italian prose.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 101.

103 Intermediate Italian U 5

Review of Italian grammar; reading of short stories and plays; increased attention to development of oral and written proficiency.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 102 or 110.

104 Intermediate Italian U 5

Prereq: 103 or 112. The following courses are not open to students with credit for 104, and only one of the decimal subdivisions may be taken for credit.

104.01 Basic Course

Intensive practice in oral and written Italian; reading of Italian short stories; grammar and idiom review; course conducted in Italian.

Su, Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 104 or any other 104 decimal subdivision.

104.02 Civilization

Aspects of Italian civilization; geography, history, social development, and the arts; readings and discussion in Italian.

Su, Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 104 or any other 104 decimal subdivision.

110† Intensive Elementary Italian U 5, 10

Elementary Italian for students wishing to acquire the basic skills in one quarter; intensive drill in form, syntax, vocabulary, and idiom; equivalent to 101 and 102.

Au, Wi, Sp Qtrs. 10 cl. Prereq: Permission of dept. Not open to students with credit for 102. Students with credit for 101 or equiv may not register for more than 5 cr hrs.

112 Intensive Italian U 5, 10, 15

Elementary and intermediate Italian; intensive drill in forms, syntax, vocabulary, and idiom; reading of short stories and plays in Italian.

Su Qtr. 15 cl. Enrollment limited to 20 students.

Prereq: Permission of chairman. Full time of student and full fees required. Equiv of 101, 102, and 103. Students with credit for 101 or the equiv may not register for more than 10 cr hrs. Students with credit for 101 and 102 or the equiv may not register for more than 5 cr hrs. Students with credit for 103 or the equiv may not register for credit. No audit.

202 Italian Conversation and Composition U 5

Sp Qtr. 5 cl. Prereq: 104 or permission of instructor.

271 Italian Literature in English Translation: 14th Century U 3

Reading and interpretation of selections from Dante's *Divine Comedy*, Petrarch's *Canzoniere*, and Boccaccio's *Decameron*; discussion of their relation to the Middle Ages and the Renaissance. Mancini.

Au Qtr. 3 cl. Prereq: English 110 or equiv. Not open to majors in Italian.

272 Italian Literature in English Translation: 15th and 16th Centuries U 3

Readings in such authors as Leonardo, Castiglione, Machiavelli, Ariosto, Tasso; discussion of their place in the Renaissance. Mancini.

Wi Qtr. 3 cl. Prereq: English 110 or equiv. Not open to majors in Italian.

273 Italian Literature in Translation: Modern U 3

Intellectual and literary trends from the end of the 19th century to the present; works by Verga, Svevo, Pirandello, Silone, and Moravia. Klopp.

Sp Qtr. 3 cl. Prereq: English 110 or equiv. Not open to majors in Italian.

293 Individual Studies U 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 cr hrs.

294 Group Studies U 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 cr hrs.

401† Review Grammar and Composition U 3

Review of Italian grammar; composition on assigned topics and practice in translation.

Wi Qtr. 3 cl. Prereq: 104 or permission of instructor.

402† Intermediate Italian Conversation and Composition U 5

Vocabulary building, practice in speaking Italian, and composition dealing with various aspects of present-day Italian life.

Au Qtr. 5 cl. Prereq: 104 or permission of instructor.

404* Italian Pronunciation U 5

Standard Italian pronunciation; lectures and practice with corrective exercises; use of phonetic symbols.

Wi Qtr. 5 cl. Prereq: 104 or permission of instructor.

- 421 Contemporary Italian Drama U 5**
Reading and analysis of representative plays of such authors as Pirandello, Betti, and DeFilippo. Klopp.
Wi Qtr. 5 cl. Prereq: 104 or permission of instructor.
- 422 Contemporary Italian Poetry U 5**
Reading and analysis of poems representing the principle tendencies of contemporary Italian poetry with emphasis upon Montale, Ungaretti, and Quasimodo. Klopp.
Sp Qtr. 5 cl. Prereq: 104 or permission of instructor.
- 423 Contemporary Italian Fiction U 5**
Narrative prose in Italy since the end of the Second World War; selected readings from such authors as Moravia, Vittorini, Pavese, and Cassola. Klopp.
Au Qtr. 5 cl. Prereq: 104 or permission of instructor.
- 601 Modern Italian Syntax U G 5**
Au Qtr. 5 cl. Prereq: 401 or permission of instructor.
- 603 Advanced Italian Conversation and Composition U G 5**
Intensive practice in speaking and writing, based on contemporary usage.
Sp Qtr. 5 cl. Prereq: 401 or 402, or permission of instructor.
- 604†* Italian Phonetics U G 3**
Training in auditory and oral aspects of Italian pronunciation; analysis of the phonetic structure of modern Italian.
Wi Qtr. 2 cl, 1 hr lab. Prereq: 404 or permission of instructor.
- 621†* Dante U G 5**
Introduction to the reading of the Divine Comedy; analysis of major episodes. Mancini.
Wi Qtr. 5 cl. Prereq: 10 cr hrs at the 400 level or permission of instructor.
- 622* Petrarch and Boccaccio U G 5**
Historical and aesthetic analysis of Petrarch's poetry; Petrarchism as a European phenomenon; literary background of Boccaccio's prose and verse; reading from the Decameron. Mancini.
Wi Qtr. 5 cl. Prereq: 10 cr hrs at the 400 level or permission of instructor.
- 623* Modern Italian Literature U G 5**
Italian literature from 1800 to 1920; Foscolo, Leopardi, Manzoni, Verga, Svevo, Carducci, and Pascoli. Klopp.
Au Qtr. 5 cl. Prereq: 10 cr hrs at the 400 level or permission of instructor.
- 624†* Contemporary Italian Literature U G 5**
Intensive study of fiction, poetry, and drama from such authors as Moravia, Pavese, Montale, Quasimodo, Pirandello, and Betti. Klopp.
Au Qtr. 5 cl. Prereq: 10 cr hrs in Italian literature at the 400 level or permission of instructor.
- 625†* Italian Literature of the Renaissance U G 5**
Readings in works of representative authors of the 15th and 16th centuries such as Leonardo, Michelangelo, Castiglione, Machiavelli, Ariosto, and Tasso. Mancini.
Sp Qtr. 5 cl. Prereq: 10 cr hrs in Italian literature at the 400 level or permission of instructor.
- 626* Italian Literature of the 17th and 18th Centuries U G 5**
Readings in selected works of Campanella, Marino,

Gallilei, Metastasio, Vico, Goldoni, Parini, and Alfieri. Klopp.
Sp Qtr. 5 cl. Prereq: 10 cr hrs in Italian literature at the 400 level or permission of instructor.

693 Individual Studies U G 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

694 Group Studies U G 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

722 Studies in Italian Literature: 14th Century U G 3

Intensive study of one author, major work, or topic such as historiography, jocular poetry, the Vita Nova; readings in relevant criticism and scholarship. Mancini.

Sp Qtr. 3 cl. Prereq: Grad students, and by permission of instructor to srs majoring in Italian with credit for 621, 622, or equiv.

725* Studies in Italian Literature: 15th and 16th Centuries U G 3

Intensive study of one author, major work, or topic such as epic poetry, the Courtier, Poliziano; readings in relevant criticism and scholarship. Mancini.

Au Qtr. 3 cl. Prereq: Grad students, and by permission of instructor to srs majoring in Italian with credit for 625 or equiv.

726* Studies in Italian Literature: 17th and 18th Centuries U G 3

Intensive study of one author, major work, or topic such as baroque poetry, Tassoni, Alfieri's theatre; readings in relevant criticism and scholarship. Mancini.

Au Qtr. 3 cl. Prereq: Grad students, and by permission of instructor to srs majoring in Italian with credit for 626 or equiv.

811* History of the Italian Language: Introduction G 3

Basic concepts of historical linguistics; the major factors of change in the history of the Italian language from the Roman times to the present. Keller.

Sp Qtr. 3 cl. Prereq: MA candidates in Italian, others by permission of instructor.

831†* Seminar in Italian Literature G 2-5

Au Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

832 Seminar in Italian Literature G 2-5

Wi Qtr. 2 or 5 cl. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

833†* Seminar in Italian Literature G 2-5

Mancini.

Sp Qtr. 2 or 5 cl. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

885†* Introduction to Methods in the History and Criticism of Literature G 5

Selected readings in basic literary history, criticism, and theory, with practice in the use of standard bibliographical aids to scholarship. Mancini.

Au Qtr. 4 or 5 cl.

Medieval and Renaissance Culture

See Medvl and Renais S 888.

Medieval and Renaissance Literature

See Medvl and Renais S 889.

893 Individual Studies G 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

894 Group Studies G 1-15

Investigation of minor problems in the various fields of Italian literature and language.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 30 cr hrs.

999 Research in Italian Language or Literature G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Japanese

Office: 276 Dieter Cunz Hall of Languages, 1841 Millikin Road, 422-5816

101 Elementary Modern Japanese U 5

Elements of standard colloquial Japanese grammar, with intensive oral and written exercises; introduction to the Japanese writing system (hiragana, katakana, and kanji).

Au Qtr. 5 cl.

102 Elementary Modern Japanese U 5

Continuation of 101.

Wi Qtr. 5 cl. Prereq: 101.

103 Elementary Modern Japanese U 5

Continuation of 102.

Sp Qtr. 5 cl. Prereq: 102.

104 Elementary Modern Japanese U 5

Continuation of 103 with supplementary reading of selected graded texts.

Au Qtr. 5 cl. Prereq: 103 or 112 or equiv with written permission of instructor.

112 Intensive Japanese U 5, 10, 15

An introductory course with emphasis on basic structure taught through oral-aural drill, Hiragana, katakana, and a limited number of kanji; equivalent to 101, 102, and 103.

Su Qtr. Prereq: Permission of dept. Full time of student and full fees required. Students with credit for 101 or equiv may not register for more than 10 cr hrs. Students with credit for 101 and 102 or the equiv may not register for more than 5 cr hrs. Not open to students with credit for 103. No audit.

205 Intermediate Modern Japanese U 5

Continuation of 104 with a shift in emphasis from the spoken to the written language; reading of selected graded texts, writing, and composition.

Wi Qtr. 5 cl. Prereq: 104 or equiv with written permission of instructor. Not open to students with credit for 105.

206 Intermediate Modern Japanese U 5

Continuation of 205.

Sp Qtr. 5 cl. Prereq: 205 or equiv with written permission of instructor. Not open to students with credit for 106.

212 Intensive Japanese U 5, 10, 15

Continuation of 103 or 112 with a gradual shift in emphasis from the spoken to the written language;

selected graded readings, writing, and composition.

Su Qtr. 15 cl. Prereq: 103 or 112, and written permission of dept. Full time of student and full fees required. Equiv of 104, 205 (or 105), and 206 (or 106). Students with credit for 104 or the equiv may not register for more than 10 cr hrs. Students with credit for 104 and 205 (or 105) or the equiv may not register for more than 5 cr hrs. Not open to students with credit for 206 (or 106).

231 Elements of Japanese Culture U 5

A survey of literature, art, religion, philosophy, and social institutions of the Japanese people from the earliest to the most recent times.

Au Qtr. 5 cl. Taught in English. Not open to students with credit for 271.

251 Pre-Modern Japanese Literature in Translation U 5

Japan's literary heritage from the 8th to the 19th century; selected readings in prose, poetry, and drama, in English translation.

Wi Qtr. 5 cl.

252 Modern Japanese Literature in Translation U 5

Modern Japanese literature from late 19th century Western influences to contemporary writers; selected readings in English translation with emphasis on Tanizaki, Kawabata, and Mishima.

Sp Qtr. 5 cl.

294 Group Studies U 1-5

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

507 Advanced Modern Japanese I U G 3

Readings in modern Japanese aiming at acquisition of control of the 1850 characters in common use; translation, composition, character drill.

Au Qtr. 3 cl. Prereq: 206 or 212 or equiv with written permission of instructor.

508 Advanced Modern Japanese II U G 3

Continuation of 507; supplementary readings in short stories and standard reference works.

Wi Qtr. 3 cl. Prereq: 507 or equiv with written permission of instructor.

509 Advanced Modern Japanese III U G 3

Continuation of 508.

Sp Qtr. 3 cl. Prereq: 508 or equiv with written permission of instructor.

514 Advanced Japanese Conversation U 3

Lectures, discussion, reports; extensive use of taped materials including news broadcasts, drama, interviews, informal conversations; conducted entirely in Japanese.

Sp Qtr. 3 cl. Prereq: 104 or permission of instructor. Repeatable to a maximum of 9 cr hrs.

601 Classical Japanese I U G 3

Classical written language with emphasis on its structure; reading and analysis of selected pre-modern literary texts. McElrath.

Au Qtr. 3 cl. Prereq: 206 or equiv with written permission of instructor. Not open to students with credit for 501.

602 Classical Japanese II U G 3

Continuation of 601. McElrath.

Wi Qtr. 3 cl. Prereq: 601 or equiv with written permission of instructor. Not open to students with credit for 502.

603 Classical Japanese III U G 3

Continuation of 602. McElrath.

Sp Qtr. 3 cl. Prereq: 602 or equiv with written permission of instructor. Not open to students with credit for 503.

621†* Social Science Readings in Japanese I U G 3

Graded readings in Japanese social science subject matter, including materials from newspapers, periodicals, and learned journals; essentially a language course intended to improve fluency.

Au Qtr. 3 cl. Prereq: 509 or permission of instructor.

622†* Social Science Readings in Japanese II U G 3

Continuation of 621.

Wi Qtr. 3 cl. Prereq: 621 or permission of instructor.

623†* Social Science Readings in Japanese III U G 3

Continuation of 622.

Sp Qtr. 3 cl. Prereq: 622 or permission of instructor.

661* Readings in Modern Japanese Literature I U G 3

Selected readings in modern Japanese fiction, poetry, drama, literary history, and criticism; essentially a language course intended to improve fluency. Morita.

Au Qtr. 3 cl. Prereq: 509 or permission of instructor.

662* Readings in Modern Japanese Literature II U G 3

Continuation of 661. Morita.

Wi Qtr. 3 cl. Prereq: 661 or permission of instructor.

663* Readings in Modern Japanese Literature III U G 3

Continuation of 662. Morita.

Sp Qtr. 3 cl. Prereq: 662 or permission of instructor.

680 Introduction to Japanese Linguistics U G 3

An introduction to the phonology, syntax, and lexicon of the Japanese language.

Wi Qtr. 3 cl. Prereq: 103 and Linguist 601, or permission of instructor.

681 History of the Japanese Language U G 3

A survey of the development of the Japanese language from early times to the present.

Sp Qtr. 3 cl. Prereq: 103 and Linguist 601 or permission of instructor.

693 Individual Studies U G 1-5

Requires the use of Japanese sources and the completion of a paper reflecting the student's research.

Su, Au, Wi, Sp Qtrs. Prereq: 509 or 603, and written permission of instructor. Repeatable to a maximum of 15 cr hrs. Not a substitute for regular language courses.

694 Group Studies U G 1-5

Investigation of minor problems in Japanese language and literature.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. Not a substitute for regular language courses.

698† Study Tour of Japan U G 15

Advanced work in conversation and reading in order to prepare for the tour. In Japan only Japanese will be

spoken; some formal instruction will be given daily by the tour leaders.

Sp Qtr. 15 cl, 2 wks at OSU; 8 wks in Japan. Prereq: 15 cr hrs in Japanese language or written permission of instructor.

754 History of Japanese Literature: Ancient through Heian U G 3

Japanese literature from the beginning to the 12th century: early myths, tales, major poets, and the leading women writers of the Heian period. McElrath.

Au Qtr. 3 cl. Prereq: 603 and 509, or permission of instructor.

755 History of Japanese Literature: Kamakura through Tokugawa U G 3

Japanese literature from the 12th through the 19th century, with emphasis on the war tales, the *No* drama, *haiku* poetry, and the fiction of the merchant class.

Wi Qtr. 3 cl. Prereq: 603 or 509 and/or permission of instructor.

756 History of Japanese Literature: Meiji, Taisho, and Showa U G 3

Japanese literature of the modern period, with an emphasis upon the development of fiction, drama, and poetry. Morita.

Sp Qtr. 3 cl. Prereq: 603 and 509, or permission of instructor.

782†* Japanese Phonology U G 3

An analysis of the phonological structure of present-day Japanese with a critical examination of traditional and contemporary works on Japanese phonology.

Sp Qtr. 3 cl. Prereq: 680, 681 or permission of instructor. Not open to students with credit for 624.

H783 Honors Course U 3-5

A program of reading arranged for each student, with individual conferences, reports, and honor thesis.

Au, Wi, Sp Qtrs. Prereq: 4th year standing; a record of A in at least half of the Japanese courses taken and an average of B in all courses; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Open only to candidates for BA in Japanese. Repeatable to a maximum of 15 cr hrs.

784* Japanese Syntax U G 3

A survey of the grammatical structures of present-day Japanese; presentation of syntactic rules within the model of transformational grammar.

Au Qtr. 3 cl. Prereq: 680, 681, or permission of instructor. Not open to students with credit for 626.

785†* Japanese Dialects U G 3

A survey of current trends and methods in Japanese dialectology; illustrative material from a variety of dialects (recordings and maps) will be used.

Wi Qtr. Prereq: 206 and 680, or equiv with written permission of instructor.

800 Japanese Bibliography and Research Methods G 3

Problems and procedures in the use of Japanese bibliographies and other reference materials. Morita.

Au Qtr. 3 cl. Prereq: 509 or permission of instructor.

877†* Topics and Problems in Japanese Literature G 3-5

Readings in the major genres of Japanese literature with emphasis on analysis and critical evaluation.

Sp Qtr. 3 cl. Prereq: 603 or 663, and written permission of instructor. Repeatable to a maximum of 15 cr hrs.

879* Seminar in Japanese Literature G 3-5

Au, Wi, Sp Qtrs. Prereq: 603 or 663, and written permission of instructor. Repeatable to a maximum of 15 cr hrs.

887 Topics and Problems in Japanese Linguistics G 3-5

A detailed investigation of specific problems in the phonological, syntactical, and lexical analysis of the Japanese language.

Sp Qtr. Prereq: 206 and 680. Repeatable to a maximum of 10 cr hrs.

998 Research in Japanese: Thesis G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

Jewish Studies

Office: 339 Dulles Hall, 230 West 17th Avenue, 422-0967

294 Group Studies U 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

694 Group Studies U G 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

Journalism

Office: 211 School of Journalism, 242 West 18th Avenue, 422-6291

101 Introduction to Mass Communication U 3

Introduction to the mass media in America, especially newspapers and broadcasting; analysis of forces and institutions affecting media behavior, and the resulting quality of performance.

Au, Wi, Sp Qtrs. 3 cl. Prereq: English 100 or 110.

200 Basic Techniques of Journalism U 3

Basic news writing, reporting, editing.

Au, Wi, Sp Qtrs. Not open to students with credit for 201.

201 Art of Communication U 5

Reporting and writing news and features for the print and electronic media.

Au, Wi, Sp Qtrs. 5 2-hr lec/labs. Prereq: 101, typing ability required.

202 News Writing U 3

Continuation of 201 with emphasis on more complicated reporting and news writing.

Su, Au, Wi, Sp Qtrs. 1 cl, 2 2-hr labs. Prereq: 201.

203 Photojournalism U 3

Reporting the news with a camera; how to recognize, develop, and create picture stories; experience in

coordinating words and news pictures; picture editing; layout.

Su, Au, Wi, Sp Qtrs. 2 cl, 1 2-hr lab. Prereq: 202.

204 Editing U 3

Editing of copy, headline writing, re-writing, and general copy desk work.

Su, Au, Wi, Sp Qtrs. 2 cl, 2-hr lab. Prereq: 201.

211 Graphics of Communication U 4

An introduction to the functions of visual and graphic communication in news in the print and electronic media, involving creative typography, photography, and perception.

Au, Wi, Sp Qtrs. 2 cl, 2 2-hr labs. Prereq: 201 or permission of instructor.

411 Reporting Radio News U 3

Audio materials, instruments and techniques used in reporting news for radio; emphasis on the technical, aesthetic and ethical problems in broadcast reporting.

Au, Sp Qtrs. 2 cl, 1 2-hr lab. Prereq: 202 and 211.

421 Journalism Laboratory—News Editorial U 2

Reporting, editing and photojournalism, primarily for *The Lantern*.

Su, Au, Wi, Sp Qtrs. No more than a total of 4 cr hrs may be earned in any combination of decimal subdivisions of 421 and 422.

421.01 Reporting

Prereq: 202 and 421.02 or 421.03.

421.02 Editing

Prereq: 204.

421.03 Photojournalism

Prereq: 203 and permission of instructor.

422 Radio News Laboratory U 2

Reporting and editing news primarily for radio news programs produced by the School of Journalism.

Au, Wi, Sp Qtrs. Prereq: 411 or permission of instructor. No more than a total of 4 cr hrs may be earned in any combination of decimal subdivisions of 421 and 422.

422.01 Radio**422.02 Advanced Radio****555 Factual Writing U G 3**

Gathering and writing factual material; research interviewing, critical analysis, and rewriting are stressed.

Au, Wi, Sp Qtrs. Prereq: English 100 or equiv. Not open to students majoring in jour.

555.01 Agriculture**555.02 Home Economics****571 Basic Journalism for Beginning Graduate Students G 5**

Introduction to the literature of journalism, reporting and news writing, editing of copy for mass media, elements of photojournalism and basic typography and production processes.

Su, Au Qtrs. 3 cl, 2 2-hr labs. Prereq: Grad standing and permission of instructor. Credit does not apply to the minimum hrs required for grad study in journal.

602 Magazine Writing U G 3

Non-fiction writing for magazines, commercial and industrial; emphasis on the non-technical full-length magazine article.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 202 or permission of instructor.

605 Development of the Mass Media in America U G 4

Major currents and trends basic in the shaping of the mass media; famous personalities, foundations, and evolution of a free, responsible press.

Au, Wi, Sp Qtrs. 4 cl. Prereq: Jr, sr, or grad standing.

607 Law of the Press, Radio, and Television U G 4

History, principles, and provisions of the law of libel, slander, copyright, and other statutes affecting newspapers, other publications, and broadcasting.

Au, Wi, Sp Qtrs. 4 cl. Prereq: Jr, sr, or grad standing.

612 Reporting Television News U G 3

Reporting and editing for the news film medium, writing for the news film and the newscast; practice in television news production and newscasting.

Au, Wi Qtrs. 2 2-hr lec/labs. Prereq: 422.01 and 422.02.

614 Supervision of Journalism in Secondary Schools U G 3

For journalism teachers in secondary schools and advisors; covers editorial, advertising, circulation, mechanical production, and publishing phases of school newspapers, magazines and annuals. Hall.

Su, Wi Qtrs. 1 cl. Prereq: 204 and Ed-C&F 435 or equiv with written permission of instructor. Open only to education majors-journalism minors.

623 Writing of Reviews and Criticisms U G 3

Study of the work of the dramatic and literary critic, especially on newspapers and magazines; practice in writing reviews and criticisms.

Su, Au, Wi, Sp Qtrs. Prereq: Jr, sr, or grad standing or permission of instructor.

624 Editorial Page U G 3

Study of the purpose, form, style, and spirit of the editorial; consideration of current events, practice in news interpretation, and other editorial writing.

Au, Wi, Sp Qtrs. 3 1-hr cl. Prereq: Journal 4th yr standing or permission of instructor.

625 Investigative Reporting U G 3

Intensive reporting and writing.

Wi, Sp Qtrs. 1 3-hr cl, conf arr. Prereq: Journal 4th yr standing or permission of instructor.

626 Newspaper Management Circulation, and Advertising U G 3

Consideration of the tasks and problems of newspaper management with emphasis on circulation policies and methods and those affecting advertising.

Sp Qtr. 3 cl. Prereq: Journal 4th yr standing or permission of instructor.

627 Advanced Editing U G 3

Advanced theory and practice in news selection, preparation and display for newspaper, magazine, broadcast and photo-journalism media; emphasis on the responsibility of the journalist.

Au, Wi, Sp Qtrs. 1 lec, 2 2-hr labs. Prereq: Journal 3rd yr standing and written permission of instructor. Repeatable to a maximum of 12 cr hrs.

627.01 News-Editorial

627.02 Radio-Television

627.03 Photojournalism

627.04 Magazine

631 Public Relations Principles U G 3

Origin and development of public relations, including ethical standards and functional role in modern society; basic principles of public relations theory, philosophy, and operation.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Jr, sr, or grad standing.

632 Case Studies in Public Relations U G 3

Specific case studies designed for internal and external audiences; organization, administration of programs and departments; analysis of techniques, channels, media, and applicable research methods.

Wi Qtr. 3 cl. Prereq: 631.

633 Public Relations Practice U G 3

Application of principles to specific public relations problems.

Au, Sp Qtrs. 2 2-hr cl. Prereq: 631. Open only to declared journalism srs or grad students.

641 Reporting Public Affairs U G 3

Instruction and practice in reporting the news of government, the courts, politics, education, finance, intergovernmental relations, political public opinion, and urban affairs.

Su, Au, Wi, Sp Qtrs. 2 cl, 1 2-hr lab. Prereq: 421.01 or 422.01 and Jr, sr, or grad standing in journalism.

642 Mass Media, Society, and Basic Issues U G 4

Analysis of the basic issues affecting news performance, especially ethics, news management, government control, gatekeeping, monopoly, etc.; assessment of the effects of the resulting performance.

Au, Wi, Sp Qtrs. 4 cl. Prereq: Sr or grad standing, or permission of instructor.

643 World Press U G 4

An analysis of newspapers, news agencies, and broadcast news outlets and their roles in the political, economic and cultural development of their nation states.

Au, Wi, Sp Qtrs. 3 cl, conf arr. Prereq: Jr, sr, or grad standing, or permission of instructor.

651 Mass Media Research and Theory U G 4

Theories of mass communication, including models based on information theory, learning theory, attitude theory, and sociocultural theory; field studies, experiments, and content analysis.

Su, Au, Wi Qtrs. 4 cl. Prereq: Jr, sr, or grad standing, or permission of instructor.

693 Individual Studies U G 1-5

Students make extensive and significant studies in the field of journalism.

Su, Au, Wi, Sp Qtrs. Prereq: Journal 4th yr standing and permission of director or grad standing and permission of instructor. No more than 5 cr hrs for undergrad and 6 cr hrs for grad students may be earned in any combination of decimal subdivisions.

693.01 News-Editorial

693.02 Radio and Television

693.03 Photojournalism

693.04 Magazines

693.05 Public Relations

694 Group Studies U G 1-5

Regular class meetings and group discussions of specified problems.
 Au, Wi, Sp Qtrs. Repeatable to a maximum of 25 cr hrs.
 a—Mass Media and Black America
 b—International Journalism Tour
 c—Critical Writing—Theatre, Cinema
 d—Intensified Study of Journalism
 e—Reporting Public Affairs at the Federal Level (Enrollment limited to graduate students in the Kiplinger program.)
 f—Reporting Public Affairs at the State and Local Levels. (Enrollment limited to graduate students in the Kiplinger program.)
 g—Field Practice in Public Affairs Reporting. (Enrollment limited to graduate students in the Kiplinger program.)

H783 Honors Course U 3-5

A program for students who are candidates for a degree *with distinction* in journal.
 Su, Au, Wi, Sp Qtrs. Prereq: Sr standing, a grade of A in half of the major courses and a B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Repeatable to a maximum of 15 cr hrs.

801 Seminar in Journalism G 4

Integrated reading and research in the fields of journalism.
 Su, Au, Wi, Sp Qtrs. Prereq: 651 or equiv. Repeatable to a maximum of 12 cr hrs.
 a—Field Studies in Mass Communication
 b—Experimental Studies in Mass Communication
 c—Content Analysis in Mass Communication
 d—Theories of Mass Communication

802 Seminar in Journalism G 4

Integrated reading and research in the fields of journalism.
 Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 12 cr hrs.
 a—People, Society, and Mass Media
 b—History of Mass Media
 c—Legal Problems in Communication
 d—Literature and Journalism

803 Seminar in Journalism G 4

Integrated reading and research in the fields of journalism.
 Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 12 cr hrs.
 a—Problems in News-Editorial Journalism
 b—Problems in Radio-Television Journalism
 c—Problems in Photojournalism
 d—Problems in Magazine Journalism
 e—Problems in Public Relations

811 Foreign Press G 5

A comparative study of news systems in the foreign mass media in major world areas, showing them as products of specific political, economic and social philosophies.
 Au Qtr. 2 2½-hr seminars. Prereq: Grad standing and permission of director of the School of Journalism.

812 International Communications G 5

Practices of journalism throughout the world and their role in hindering or advancing the international dissemination of news; manipulative communication between nations.

Wi Qtr. 2 2½-hr seminars. Prereq: Grad standing and permission of director of the School of Journalism.

813 Foreign Correspondence G 5

Analysis of international developments as reported in world press media as to their origins, issues, and likely evolution.
 Sp Qtr. 2 2½-hr seminars. Prereq: Grad standing and permission of director of the School of Journalism.

899 Interdepartmental Seminar G 1-5

See Interdepartmental Seminars.

999 Research in Journalism G Arr

Research for thesis purposes only.
 Su, Au, Wi, Sp Qtrs.

Labor and Human Resources

Office: 131 Page Hall, 1810 College Road, 422-2809

211 Unionism and Collective Bargaining in the U.S. U 5

A survey of unionism and collective bargaining in the U.S. Development, structure, and government of unions; process, content and effects of collective bargaining. Blaine and Sander.
 Au, Sp Qtrs. 5 1-hr cl. Prereq: 10 cr hrs in social sciences.

612 Law of Industrial Relations U G 4

Law and policy in labor-management and union-member relations; unfair labor practices; union internal affairs. Sander.
 Wi Qtr. 2 2-hr cl. Prereq: Econ 580 or equiv with written permission of instructor.

613 Trade Union Administration U G 4

An examination and analysis of the structure and government of American worker organizations as an institutional response to social, political, economic, and legal forces. Slanicka and Blaine.
 Sp Qtr. 2 2-hr cl. Prereq: Econ 580 or equiv with written permission of instructor.

614 Public Sector Collective Bargaining U G 4

Legislative, judicial, economic, and social factors in public sector bargaining. Survey of practice in federal, state, and local jurisdictions. Beneki.
 Au Qtr. 2 2-hr cl. Prereq: Econ 580 or equiv with written permission of instructor.

651 Human Resource Policy: Conceptual Framework and Issues U G 4

Comprehensive overview of the dimensions of human resource policy: issues in human resource development, allocation, maintenance, and utilization. Ronchi and staff.
 Au Qtr. 2 2-hr cl. Prereq: Econ 580 or equiv with written permission of instructor.

652 Human Resource Policy: Legislation and Institutions U G 4

Critical review of current or proposed legislation and institutions relating to human resource development, maintenance, and utilization.

Wi Qtr. 2-2-hr cl. Prereq: Econ 580 or equiv with written permission of instructor.

653 Human Resource Planning U G 4

Survey of concepts and techniques of manpower planning, with special emphasis on projections of manpower requirements. Chirikos and Kelley.

Sp Qtr. 2-2-hr cl. Prereq: Econ 580 or equiv with written permission of instructor.

654 Social Psychological Aspects of Human Resource Problems U G 4

An application of social-psychological theory and methods to issues in human resources with emphasis on the critical analysis of existing assumptions about economic behavior. Ronchi.

Wi Qtr. 2-2-hr cl. Prereq: Psych 100, Sociol 101 or 201, or equiv with written permission of instructor.

660 Introduction to Manpower and Industrial Relations U G 4

Principles and practices of recruiting, selecting, developing, collective bargaining, compensating, and utilizing effective manpower resources.

Su, Au, Wi, Sp Qtrs. 4 cl. H660 (Honors) may be available to students enrolled in an honors program or by permission of faculty. Prereq: Econ 400 or 402, or equiv. Not open to students with credit for Bus-Mgt 660. Cross-listed in Bus-Mgt.

693 Individual Studies U G 3-5

Individual study in labor and human resources. Student develops a course of study in consultation with faculty member for work on problem(s) of particular interest.

Su, Au, Wi, Sp Qtrs. Prereq: 15 cr hrs in LHR and written permission of instructor. Repeatable to a maximum of 10 cr hrs.

694 Group Studies U G 3-5

Advanced topics in labor and human resources.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 15 cr hrs in LHR and written permission of instructor. Repeatable to a maximum of 10 cr hrs.

761 Industrial Relations Administration U G 4

Examination of the process of accommodation and rule-making among management, employees, and government relative to their respective goals and strategies, and pertinent legislation and environmental constraints. Miljus and Yaney.

Au, Wi Qtrs. 2 1½-hr cl. Prereq: Bus-Mgt 660 or 701, or permission of instructor. Cross-listed in Bus-Mgt.

762 Compensation Administration U G 4

Managerial aspects of motivation and compensation principles and practices for administrative, operative, research, and professional employees in private and public organizations. Benecki.

Wi, Sp Qtrs. 2 1½-hr cl. Prereq: 660 or Bus-Mgt 660 or 701, or permission of instructor. Not open to students with credit for Bus-Mgt 762. Cross-listed in Bus-Mgt.

769 Problems in Manpower and Industrial Relations U G 4

Problems and case histories are utilized to develop proficiency in applying principles and developing decision-making abilities in regard to manpower and human relations areas. Campagna.

Wi, Sp Qtrs. 2-2-hr cl. Prereq: 761, 762 or Bus-Mgt 761, or permission of instructor. Not open to students with credit for Bus-Mgt 769. Cross-listed in Bus-Mgt.

799 Policy Seminar in Labor and Human Resources U 5

Each student is responsible for preparing a major paper on a policy issue in labor and human resources. Weekly meetings for progress reports and presentation of papers.

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Sr standing. Open only to sr majoring in labor and human resources. Repeatable to a maximum of 15 cr hrs.

Landscape Architecture

School of Architecture

Office: 33 Brown Hall, 190 West 17th Avenue, 422-8263

201 History of Landscape Architecture U 3

A critical and historical analysis of the organization of outdoor space from earliest times to the Italian Renaissance; emphasis on physical forms resulting from social, cultural, and technological forces.

Au Qtr. 3 cl.

202 History of Landscape Architecture U 3

A critical and historical analysis of the organization of outdoor space from the French Renaissance to 1900 A.D.; emphasis on physical forms resulting from social, cultural, and technological forces.

Wi Qtr. 3 cl.

203 History of Landscape Architecture U 3

A critical and comparative analysis of the organization of outdoor space since 1900 A.D.; emphasis on physical forms resulting from social, cultural, and technological forces.

Sp Qtr. 3 cl.

204 Design of Gardens and Small Properties U 5

Au Qtr. 2 cl, 4 lab hrs.

205 Design of Gardens and Small Properties U 5

Design of small-scale projects; master planning, use of plants and architectural materials, graphic presentation.

Wi Qtr. 2 cl, 4 lab hrs. Prereq: 204.

241 Landscape Architectural Design U 5

Study of existing outdoor spaces via graphics and models; design principles, elements and spatial organization.

Au Qtr. 1 cl, 14 lab hrs.

242 Landscape Architectural Design U 5

Development of landscape design skills in abstract and real forms; color and complex spatial organization.

Wi Qtr. 2 cl, 12 lab hrs. Prereq: 241.

243 Landscape Architectural Design U 5

Landscape design and programming processes; integration of these processes with previously developed skills.

Sp Qtr. 1 cl, 14 lab hrs. Prereq: 205 or 242 or 271.

271 Landscape Architecture Graphics I U 3

Basic graphic elements, media and skills used in preparing and delineating freehand plans, sections, elevations and isometrics essential to landscape architecture presentations.

Au Qtr. 6 lab hrs.

272 Landscape Architecture Graphics II U 3

Basic graphic elements, media and skills used in preparing hardline drafted plans, sections and base sheets for landscape architecture design and construction.

Wi Qtr. 1 cl, 4 lab hrs.

273 Advanced Landscape Architecture Graphics U 3

Basic graphic elements, media and skills used in preparing hardline drafted plans, sections and base sheets for landscape architecture designs.

Sp Qtr. 1 cl, 4 lab hrs. Prereq: 271 and 272.

300 Outlines of Landscape Architecture U 3

Landscape architecture and environment; relations with other disciplines.

Su, Au, Wi, Sp Qtrs. 3 cl.

321 Landscape Construction: Site Systems U 5

Study of techniques essential to the horizontal and vertical development of site designs. Emphasis on grading, earthwork and soils.

Au Qtr. 3 cl, 6 lab hrs. Prereq: 205 or 272 or Arch 221; Math 148 or 150.

322 Landscape Construction: Site Systems U 5

Study of techniques essential to horizontal and vertical development of site designs. Emphasis on drainage, layout, and circulation.

Wi Qtr. 3 cl, 6 lab hrs. Prereq: 205 or 242 and Math 149 or 150.

323 Landscape Construction: Site Systems U G 5

Integration of site systems; application of site technology to preparation of landscape construction drawings, and landscape materials detailing.

Sp Qtr. 3 cl, 4 lab hrs. Prereq: 205 or jr standing in larch.

341 Landscape Architectural Design U 5

The landscape design process applied to site analysis, circulation, spatial structure, and design detailing.

Au Qtr. 2 cl, 12 lab hrs. Prereq: 242 and 243.

342 Landscape Architectural Design U 5

The landscape design process with emphasis on plant materials as major site design material.

Wi Qtr. 2 cl, 12 lab hrs. Prereq: 242 and 243.

343 Landscape Architectural Design U 5

Social science inputs in landscape design at site planning scale; use of plant materials in spatial form development.

Sp Qtr. 2 cl, 12 lab hrs. Prereq: 321, 341, 342.

421 Landscape Construction: Materials I U 4

Properties and production of man-made landscape building materials; material performance in exterior application; construction detailing with emphasis on wood and masonry assemblies.

Wi Qtr. 3 cl, 4 lab hrs. Prereq: 205 or 272; Math 148 or 150.

422 Landscape Construction: Materials II U 4

Application of man-made landscape building materials to construction problems; emphasis on metals, ceramics, concrete, asphalt, and plastic materials.

Sp Qtr. 2 cl, 4 lab hrs. Prereq: 421.

441 Landscape Architectural Design U 5

Study of the influence of economic, social and natural factors on design; case studies at project scale.

Au Qtr. 2 cl, 12 lab hrs. Prereq: 343.

442 Landscape Architectural Design U 5

Macroscale site planning; environmental criteria as bases for design decision making.

Wi Qtr. 1 cl, 14 lab hrs. Prereq: Jr standing.

443 Landscape Architectural Design U 5

Macroscale environmental planning; emphasis on multidisciplinary approaches to landscape design.

Sp Qtr. 1 cl, 14 lab hrs. Prereq: 441.

451 Landscape Architecture Seminar U 4

Research, discussion, and exercises pertinent to landscape architecture and related fields.

Au Qtr. 4 cl. Prereq: Jr standing in larch.

693 Individual Studies U G 2-5

For students in the Graduate School and those who wish to pursue special studies in landscape architecture.

Au, Wi, Sp Qtrs. Prereq: 4th yr standing or permission of division. Repeatable to a maximum of 20 cr hrs.

694 Group Studies U G 2-5

For students majoring in landscape architecture desiring to pursue special studies not offered in the fixed curriculum.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of the division. Repeatable to a maximum of 15 cr hrs.

Latin

Office: 414 University Hall, 230 North Oval Mall, 422-2744

Also see Classics.

Students with two years of high school Latin should enroll in Latin 103; with three years of high school Latin, including Cicero, in Latin 104; with three years of high school Latin, including Vergil, in 103 and 201. Latin majors should consult the departmental statement in the College of Humanities section of the Colleges of the Arts and Sciences bulletin. Placement tests are required for all matriculating (including transfer) students who continue the study of Latin in the University in courses 100, 101, 102, 103, 104, 200, 201, and 202. A placement test will be given on the first day of the quarter. For details see the departmental secretary in 414 University Hall.

100 Latin Review U 5

For those students whose elementary Latin will begin with a review and continue as a preparation for Latin 103.

Au Qtr. 5 cl. Prereq: Placement test.

101 Elementary Latin I

Su, Au, Wi, Sp Qtrs. Not open to students with credit for Latin 100.

101.01 Classroom Track U 5

5 cl. Students must register for and complete five credit hours during the quarter.

101.02 Individualized Track U 1-5

Students register for and complete from one to five credit hours during the quarter. Students who complete five hours before the end of the quarter may proceed to 102.02. In 101.02, 102.02 and 103.02 progress is sequential from one credit hour to the next, with proficiency at the level of 80% required for advancement.

102 Elementary Latin II

Su, Au, Wi, Sp Qtrs. Not open to students with credit for 100.

102.01 Classroom Track U 5

5 cl. Prereq: 101.01 or 5 credit hours of 101.02. Students must register for and complete five credit hours during the quarter.

102.02 Individualized Track U 1-5

Prereq: Grade B- or above in 101.01 or five credit hours of 101.02 or permission of instructor. Students may register for 101.02 and 102.02 concurrently with permission of instructor. Progress is sequential from one credit hour to the next, with proficiency at the level of 80% required for advancement.

103 Intermediate Latin I

Intermediate readings with emphasis on prose authors of the 1st century B.C.

Su, Au, Wi, Sp Qtrs.

103.01 Classroom Track U 5

5 cl. Prereq: 102.01 or five credit hours of 102.02. Students must register for and complete five credit hours during the quarter.

103.02 Individualized Track U 1-5

Prereq: Grade of B- or above in 102.01 or 5 credit hours in 102.02 or permission of instructor. Students may register for 102.02 and 103.02 concurrently with permission of instructor. Progress is sequential from one credit hour to the next, with proficiency at the level of 80% required for advancement.

104 Intermediate Latin II U 5

Intermediate readings with emphasis on the poetry of the Augustan Age.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 3 yrs of secondary school Latin, or 103, or 112.

110† Intensive Elementary Latin U 5, 10

Wi Qtr. Prereq: Permission of dept. Not open to students with credit for 102; students with credit for 101 or the equiv may not register for more than 5 cr hrs.

112† Intensive Introduction to Latin U 5, 10, 15

Su Qtr. 10 cl and 10 or more hrs of supervised study. Full time of student and full fees required. Equiv of 101, 102, and 103. Students with credit for 101 or the equiv may not register for more than 10 cr hrs. Students with credit for 101 and 102 or equiv may not register for more than 5 cr hrs. Students with credit for 103 or equiv may not register for credit. No audit.

200† Latin Lyric U 5

Selections from the lyric poetry of Catullus and Horace. Davis.

Sp Qtr. 5 cl. Prereq: 104 or equiv secondary school Latin.

201†* Republican Prose U 5

Selections from the works of one or more of the following authors: Cicero, Caesar, Sallust, Nepos. Schlam.

Wi Qtr. 5 cl. Prereq: 104 or equiv in secondary school Latin.

202†* Latin Comedy U 5

Selected plays of Plautus and Terence. Davis.

Wi Qtr. 5 cl. Prereq: 104 or equiv in secondary school Latin.

203* Prose of the Empire U 5

Selections from the works of one or more of the following authors: Livy, Pliny, Seneca, Suetonius. Hahm.

Au Qtr. 5 cl. Prereq: 104 or equiv in secondary school Latin.

204* Satire U 5

Selections from the satires of Horace and Juvenal. Morford.

Sp Qtr. 5 cl. Prereq: 104 or equiv in secondary school Latin.

205* Augustan Poetry U 5

Selections from the works of one or more of the following authors: Ovid, Propertius, Tibullus, Vergil. Leonardon.

Wi Qtr. 5 cl. Prereq: 104 or equiv in secondary school Latin.

293 Individual Studies U 1-3

Intermediate readings in Latin literature.

Su, Au, Wi, Sp Qtrs. Prereq: Latin 101-104 or equiv; written permission of department. Repeatable to a maximum of 10 cr hrs.

501* Elementary Latin for Graduate Students U G 5

Basic Latin grammar and syntax for mature students proceeding to work in non-classical fields using Latin sources. Kratz.

Au Qtr. 5 cl. Prereq: Grad standing or permission of instructor. Credit does not apply to minimum hours required for the master's or doctoral degree. No audit.

502* Intermediate Latin for Graduate Students U G 5

Continuation of 501 with reading of longer and more difficult texts as preparation for 625. Kratz.

Wi Qtr. 5 cl. Prereq: Grad standing or permission of instructor; Grade of C or above in 501 or equiv preparation by a placement test. Credit does not apply to the minimum hours required for the master's or doctoral degree. No audit. Repeatable to a maximum of 10 cr hrs.

612 Latin Prose Composition U G 3

Review of elementary syntax leading to composition of sentences and short connected passages; concurrent readings from Caesar or Cicero. Vaughn. Wi Qtr. Prereq: 312 or equiv with written permission of instructor.

615†* Readings in Cicero U G 3

Au Qtr. 3 cl. Prereq: 4 courses more advanced than 104.

616†* Readings in Vergil U G 3

Amarel.

Wi Qtr. 3 cl. Prereq: 4 courses more advanced than 104.

617* Readings in Caesar U G 3

Babcock.

Au Qtr. 3 cl. Prereq: 4 courses more advanced than 104.

618* Readings in Lucretius U G 3

Tracy and Snyder.

Su, Sp Qtrs. 3 cl. Prereq: 4 courses more advanced than 104. Not open to students with credit for 339.

619†* Readings in Ovid U G 3

Sp Qtr. 3 cl. Prereq: 4 courses more advanced than 104. Not open to students with credit for 344.

620* Readings in Livy U G 3

Hahm.

Wi Qtr. 3 cl. Prereq: 4 courses more advanced than 104. Not open to students with credit for 300.

621† Readings in Latin Letters U G 3

Extensive readings in the letters of Cicero and Pliny with limited readings from Seneca's letters and Latin poetic epistles. Morford.

Su Qtr. Prereq: 4 courses more advanced than 104.

625* Readings in Medieval Latin U G 3

Extensive reading in texts illustrating the history of Latin language and literature from the 4th through the 13th century. Kratz.

Sp Qtr. 3 cl. Prereq: 2 courses at the 200 level or above, or 502, or permission of instructor.

626† Readings in Renaissance Latin U G 3

Extensive reading in texts illustrating the history of the Latin language and literature from the 14th century. Schlam.

Sp Qtr. 3 cl. Prereq: 2 courses at the 200 level or above, or 502, or permission of instructor.

693 Individual Studies U G 1-6

Passages for reading and topics for investigation will be selected to meet the needs of individual students.

Su, Au, Wi, Sp Qtrs. Prereq: 4 courses more advanced than 104. Repeatable to a maximum of 15 cr hrs.

694† Group Studies U G 1-6

Su, Au Qtrs. Prereq: 4 courses more advanced than 104 or permission of chairman. Repeatable to a maximum of 20 cr hrs.

H783 Honors Course U 3-5

A program of study arranged for each student with individual conferences, reports and an honor thesis.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the Latin courses taken and with an average of B in the remainder; written permission of instructor under whose supervision the work is to be completed and ASC Honors Committee. At least 2 qtrs are required of candidates for the degree BA with *distinction* in Latin. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs.**General Prerequisites for Courses Numbered 800 and Above***Prerequisites for admission to courses numbered 800 and above are graduate standing and permission of the chairman.***802† Plautus and Terence G 4**

Au Qtr.

803† Horace G 4

Sp Qtr.

803.01 Odes and Epodes

Babcock.

803.02 Epistles

Babcock.

803.03 Satires

Tracey

804† Tacitus G 4

Babcock.

Au Qtr.

805† Seneca G 4

Au Qtr.

806 Livy G 4

Morford.

Au Qtr.

807 Petronius and Apuleius G 4

Schlam.

Wi Qtr.

808† Lucretius G 4

Snyder.

Sp Qtr.

809† Lyric and Elegiac Poetry G 4

Davis.

Wi Qtr.

810† Sallust G 4

Morford.

Wi Qtr.

811† Juvenal G 4

Morford.

Wi Qtr.

812 Vergil G 4**812.01† Eclogues**

Tracy.

Au Qtr.

812.02† Georgics

Morford.

Su Qtr.

812.03 Aeneid

Babcock.

Sp. Qtr.

813† Lucan G 4

Morford.

Sp Qtr.

814† Cicero G 4**814.01 The Philosophical Works**

Au Qtr.

814.02 The Rhetorical Works

Vaughn.

Au Qtr.

814.03 The Letters

Schlam.

Sp Qtr.

821 Comparative Grammar of Greek and Latin G 4

Vaughn.

Au Qtr. Not open to students with credit for 820, Greek 810 or 821.

827† Vulgar Latin G 3

Wi Qtr. Prereq: Grad standing in Latin, or French 812, or equiv linguistic basis.

850† Early Latin Literature G 4

The origins and early development of Latin literature with readings from the fragments. Lacey.
Wi Qtr.

852† Later Latin Literature G 4

Selected Latin authors from the 2nd through the 6th centuries A.D.
Sp Qtr.

855† Latin Epigraphy G 3

Babcock.
Sp Qtr.

856† Topography of Rome G 3

The topography and archaeology of Ancient Rome as background to Roman history and literature. Morford.
Sp Qtr.

860 Palaeography G 3

Schlam.
Sp Qtr.

861† Textual Criticism G 3

Schlam.
Wi Qtr. Prereq: 860.

Medieval and Renaissance Culture

See Medvl and Renais S 888.

Medieval and Renaissance Literature

See Medvl and Renais S 889.

894† Group Studies G 1-6

Su, Au, Sp Qtrs. Repeatable to a maximum of 20 cr hrs.

993 Individual Studies G 1-4

Assigned reading and individual research.
Su, Au, Wi Sp Qtrs. Repeatable to a maximum of 20 cr hrs.

995 Seminar I G 5

The seminar will normally consist of a two-term sequence Au, Wi or Wi, Sp; an intensive study of an author or genre eg, Horace, Lucan, Cicero, or satire. Topic for 1977-78: Ovid. Davis.

Wi Qtr. Repeatable to a maximum of 20 cr hrs. Credit in this course will be granted only with the completion of 996.

996 Seminar II G 5

Continuation of 995.
Sp Qtr. Prereq: 995. Repeatable to a maximum of 20 cr hrs.

999 Research G Arr

Research for thesis or dissertation purposes only.
Su, Au, Wi, Sp Qtrs.

Law

Office: 112 Law Building, 1659 North High Street,
422-2631

502 Appellate Practice I P 0-1

Procedural and substantive aspects of appellate

practice; the student prepares a brief and presents an oral argument on the basis of assigned research materials.

Au, Wi, Sp Qtrs. 3-qtr sequence; 1 cr hr assigned Au Qtr, and 0 cr hr assigned Wi and Sp Qtrs. S or U grade given on completion of 3-qtr program.

503 Contracts P 3

Remedies for breach; offer and acceptance; consideration; third party beneficiaries; assignment of rights and delegation of duties; conditions; impossibility and frustration; statute of frauds.

Au, Wi, Sp Qtrs. 3 cl, 3-qtr sequence; credit given on completion of 9 cr hrs.

504 Torts P 2-4

Trespass to person; negligence; misrepresentation; nuisance, strict liability; liability insurance; alternatives to the fault system; and federal and state regulation of traffic safety.

Wi, Sp Qtrs. 4 cl, 2-qtr sequence; credit given on completion of 8 cr hrs.

505 Property I P 3

Incidents of ownership as applied to both real and personal property; possessory interests; concurrent interests; marital interests; future interests; contractual modification of these interests.

Au, Wi Qtrs. 3 cl, 2-qtr sequence; credit given on completion of 6 cr hrs.

506 Property II P 3

Acquisition and transfer of ownership; adverse possession; conveyances, deeds, mortgages, and leases; intestacy; wills; the recording systems; title registration.

Sp Qtr. 3 cl.

507 Civil Procedure P 3

Civil procedure in state and federal courts; development of equity; abolition of common law forms of action; merge of law and equity; jurisdiction; venue.

Au, Wi, Sp Qtrs. 3 cl, 3-qtr sequence; credit given on completion of 9 cr hrs.

510 Constitutional Law P 3

Functional study of the major substantive, methodological, and federalistic limitations upon governmental power obtaining under practice of judicial review.

Wi, Sp Qtrs. 3 cl, 2-qtr sequence; credit given on completion of 6 cr hrs.

511 Legal Research P 2

Use of law books, both English and American; problems in the use of reports, statutes, selected annotated cases, texts, encyclopedias, digests, dictionaries, periodicals, and citation books.

Au Qtr. 2 cl.

512 Introduction to Federal Income Taxation P 3

Basic topics in federal income taxation under Internal Revenue Code, Income Tax Regulations, administrative rulings, and cases including research problems, and consideration of tax policies.

Au Qtr. 3 cl.

600 Appellate Practice II P 1 or 2

Preparation of a brief and presentation of several oral arguments; participation by second-year students as advisers in first-year Moot Court Program.

1 or 2 cr hrs by arrangement with instructor. Repeatable to a maximum of 2 cr hrs with permission of the instructor. S or U grade given on completion of second-year Moot Court Program.

602† Legal Process P 3 or 4

Comparative evaluation of law-making by private parties, courts, legislatures, and administrative agencies; retroactivity; adherence to precedent; purposes of legislation; statutory interpretation.

603 Evidence P 3-6

Survey of rules of evidence; particularly demonstrative, testimonial, and circumstantial proof; qualification and examination of witnesses; privilege; relevancy; documents; hearsay rule and its exceptions.

1- or 2-qr sequence; credit on completion of 4-6 cr hrs.

604 Pleading P 3

Pleading under codes and Federal Rules of Civil Procedure; requirements of pleadings; variance and amendments; defenses; denials and new matter; counterclaims; reply; demurrer; motions; interrogatories; joinder.

605 Commercial Paper P 3

Types of commercial or negotiable paper; transfer; purchase and payment in due course; discount and security.

606 Federal Income Taxation

Trade or business and production of income deductions; income splitting by private arrangement; sales and other dispositions of property; capital gains and losses.

606.01 Federal Income Taxation P 4

Traditional federal income taxation course with class time limited to one quarter.

Not open to students with credit for 606.02.

606.02 Federal Income Taxation P 3

Consideration of the basic material covered in 606.01 with extended coverage in certain areas, including practice and procedure, partnerships and corporations.

3 cl; 2-qr sequence; credit given on completion of 6 cr hrs.

607 Business Associations

Forms of business organizations; planning corporate and other relationships for commercial and industrial purposes.

607.01 Business Associations P 2-5

Formation, financing, and governance of corporations, partnerships, and other business organizations; problems of federal corporation law; corporate acquisitions and divestitures.

2-5 cl; 2-qr sequence; credit given on completion of 7 cr hrs. Not open to students with credit for 607.02, 607.03 or 632.

607.02 Business Associations I P 2-3

Formation, financing, governance, and regulation of corporations, partnership, and other business organizations; problems under the Securities Exchange Act of 1934.

2, 3, or 5 cl. 1- or 2-qr sequence; credit on completion of 5 cr hrs. Not open to students with credit for 607.01 or 632.

607.03 Business Associations II P 3

Problems of the large, publicly-held corporation; federal corporate law; corporate consolidations and distributions.

Prereq: 607.02. Not open to students with credit for 607.01 or 632.

609 Sales P 3

A study of the Uniform Commercial Code and other statutes bearing on the sale of goods in the American market.

610 Secured Transactions P 3

Emphasis on the Uniform Commercial Code; financing sale of goods, intangibles, and proceeds; validity of and perfecting security interests; priorities and remedies.

612† Admiralty Law P 3

Admiralty jurisdiction; injuries to seamen and maritime workers; bills of lading; charter parties; salvage; general average; limitation of liability.

613 Labor Law P 4

Collective bargaining processes and duty to bargain; grievance arbitration; legal limitation on economic pressures, including interference with bargaining, strikes, picketing, and boycotts.

Not open to students with credit for 630.

**614† Comparative Law—
Western Europe P 3**

Substantive and procedural aspects of foreign legal systems in comparison with American law.

**615† Comparative Law—
Latin America P 3**

A comparative study of selected aspects of Latin-American and Anglo-American law.

617† Estate-Gift Taxation P 3

Federal gift and estate taxation; federal tax practice; interrelationships of death and gift taxes with federal income taxes.

Not open to students with credit for 631.02.

618 Insurance P 3

Insurance law and practice with particular reference to fire, life, and automobile insurance; insurable interest; warranties and representation; waiver and estoppel; construction standard policies.

619* International Law P 3-6

Current problems in international law; international agreements; status of states and individuals; recognition; jurisdiction and procedural prerequisites to assertion of international claims.

620* Jurisprudence P 3

Jurisprudential thought as represented by general theories of or about law; assessment of leading legal doctrines; relationship to social control policy and to legal precepts.

621 Real Property Mortgages P 3

Mortgages and their use as a security device in real property transactions; common mortgage provisions; methods of enforcement of right; "equitable" mortgages.

622† State and Local Taxation P 3

Legal problems arising in property, excise, income, and estate-inheritance taxation; tax administration and procedure.

623 Federal Antitrust Law

Prohibition of monopoly and restraint of trade by Sherman and Clayton Antitrust Acts, Federal Trade Commission Act and related statutes.

623.01 Federal Antitrust Law P 2-6

Contracts, combinations, and conspiracies in restraint of trade; monopolization attempts and conspiracies to monopolize; mergers, patent antitrust problems, and price discrimination under Sherman, Clayton, and Federal Trade Commission and its related statutes.

2-6 cl, 1- or 2-qr sequence; grade given on completion of 5 or 6 cr hrs. Not open to students with credit for 623.02, 623.03, or 655.

**623.02† Federal Antitrust Law—
Restraint of Trade P 3**

Contracts, combinations, and conspiracies in restraint of trade under the Sherman, Clayton, and Federal Trade Commission Acts, and related statutes.

Not open to students with credit for 623.01 or 655.

**623.03† Federal Antitrust Law—
Monopolies and Mergers P 3**

Monopolies, attempts and conspiracies to monopolize, mergers and patent-antitrust problems under Sherman, Clayton, and Federal Trade Commission Acts and related statutes.

Not open to students with credit for 623.01 or 655.

624 Taxation of Foreign Income P 3

Taxation of individuals and businesses operating in United States and abroad; jurisdiction; income source; foreign tax credit; treaty structure; special statutory entities for foreign trade.

625* Copyright Law P 3

Protection of literary, musical, artistic, and commercial property under common law; the federal copyright statute and related legislation.

**626* Law, the United Nations,
and Ideological Conflict P 3**

International organizations dealing with breaches of international peace; ideological conflict in attitudes toward international law among socialist, Third World, and Western countries, and on conflict among the superpowers.

627* American Legal History P 3

Studies in history of American law and exploration of relationship between development of the legal system and rise of an industrial society.

**628 Legal Problems
of Financial Information P 3**

Substantive law problems involving financial information in the basic context of partnership and corporation law and the Internal Revenue Code.

629 Legislation P 3

Roles of the lawyer in the legislative process; legislative organization, jurisdiction, and procedure; formation of legislative policy; legislative drafting; statutory interpretation.

630 Labor Law and Practice P 1-5

Law and practice in labor-management and union-employee relations; self-organization; unfair labor practices; arbitration; emergency disputes; public employment and union internal affairs.

1-5 cl; 1- or 2-qtr sequence; credit on completion of 5 or hrs. Not open to students with credit for 613.

632† Corporations P 3

Formation; rights and duties of directors, officers, and shareholders; derivative suits; issuance and transfer of securities. See 607.

3 cl; 2-qtr sequence; credit given on completion of 6 or hrs. Not open to students with credit for 607.

633 Criminal Law P 3 or 5

Criminal laws as means of attaining socially desirable ends, stressing criminal behavior and handling of those who engage in that behavior.

3-5 cl; 1- or 2-qtr sequence; credit on completion of 5-6 or hrs.

634 Family Law I P 3

The law applicable to children, including a study of agency and juvenile court treatment of dependent, neglected, abused, unruly, and delinquent children.

635 Family Law II P 3

Problems of the marriage relationship, including marriage, annulment, divorce, custody, intra-family relationships, and relation of family members with others.

636 Law and the Mentally Disabled P 3

Problem-oriented analysis of interaction between law and social science. Emphasis on civil commitment, rights of institutionalized individuals, rights to community services (educational, residential, employment), and guardianship.

637* Legal History P 3

Comparative studies in history of law and exploration of relationship between development of legal systems and societal structures.

**638 Legal Problems
in Real Estate Financing****638.01 Legal Problems in Real Estate
Financing I P 3**

Introduction to the basic legal components of a real estate transaction; emphasis upon mortgages, tax and mechanics' liens, and basic taxation.

Not open to students with credit for 621.

**638.02 Legal Problems in Real Estate
Financing II P 3**

Advanced study of the modern financing forms and other legal concepts available to accomplish real estate objectives, including tax, corporate, partnership and securities law.

Prereq: 638.01 or 621.

639† Urban Housing P 3

Housing needs of the urban poor considered in the light of the rights, remedies, and resources of the legal system.

640 Criminal Justice I P 3-4

Police practices including search, seizure, arrest, interrogation, line-ups, and entrapment.

641 Criminal Justice II P 3-4

Study of proceedings in felonies from preliminary hearing through post-conviction remedies; double jeopardy.

642† Legal Problems of the Poor P 3

Study of law, legal institutions, and policy issues of particular relevance to selected problems of the poor.

642.01 Legal Problems of the Poor: Civil

Examination of the causes and effects of poverty in relation to the law, legal institutions, and public policy.

642.03 Legal Problems of the Poor: Corrections

Examination of the correctional process, including sentencing, prison administration, and the parole system.

**642.04 Legal Problems of the Poor:
Crime and Delinquency**

Examination of the causes and effects of crime and delinquency as they relate to criminal law processes.

643† Injunctions P 3

Requirements and uses of injunctions and other equitable remedies to redress violations of constitutional, statutory, and common law rights.

644 Agency and Employment P 3

A system-descriptive approach to the common incidents of employment, partnership, and other agencies.

645† Urban Development P 3

The inner city and regional planning through zoning, condemnation, and other legal devices.

Not open to students with credit for 648 or 649.

646 Dignitary Torts P 3

Legal rights and remedies developed to protect interests in reputation, privacy, and other aspects of human dignity.

647 Sex-Based Discrimination and the Law P 3

Law, legal institutions, and policy issues relevant to the redress of sex-based discrimination. Constitutional, legislative, executive, and judicial avenues of redress.

648 Land Use Planning I P 3

Techniques and consequences of limitations imposed upon use of private land by private covenant and public action; nuisance; covenants; zoning, and subdivision controls.

Not open to students with credit for 645.

649 Land Use Planning II P 3

Study of public regulatory devices for land use and development; eminent domain; planned unit development; urban renewal; official maps; new towns; open space.

Prereq: 645 or 648.

650 Local Government Law P 3

Types and organizations of local government units; intergovernmental relations; "home rule" power of Ohio municipalities; personnel; lawmaking; community planning; taxing and finance; contracts; legal liability.

651 Law and Inflation P 3

How inflation distorts legal institutions; techniques for minimizing such distortions with particular focus on taxation, contracts, torts, and rent control.

652 Banking Law P 3

Study of development of banking activities, structure, and regulation; emphasis on Federal Reserve System, inter-institutional competition, and administrative, antitrust, and commercial law problems.

653† Labor Relations in Public Employment P 3

The law and practice of labor relations in public employment; constitutional principles and statutes involved; rights of employee association, choice of bargaining representative; collective bargaining; impasse resolution, including strikes.

Prereq: none; 613 or 630 recommended.

654† Government Contract Law P 3

Federal government contract and procurement law, with brief comparative discussion of Ohio practice; to include power to contract, formation, bids, performance, remedies and dispute settlement.

Prereq: none; 729 recommended.

655† Antitrust Law and Economics P 4

Analysis of antitrust law in the light of economic theories. Conspiracies in restraint of trade, monopolization, mergers and acquisitions, under the Sherman and Clayton Acts.

Not open to students with credit for 623.

656 Gratuitous Transfers P 3

Gifts, wills, intestate succession, protection of spouse and other dependents, fiduciary administration, social security and other employee benefits, life insurance.

Not open to students with credit for 506 prior to September 1975.

657 Consumer Law P 3

In-depth study of consumer rights and remedies as provided by the common law and federal and state statutes, with primary focus on the Federal Truth In Lending Act.

658 Advanced Constitutional Law P 3

Constitutional theory, with emphasis on competing views of judicial review and the judicial function; the methodologies and processes of constitutional decision making; and criteria for judicial justification.

694 Group Studies P 1-6

Group study in selected areas of the law.

Repeatable to a maximum of 20 cr hrs.

700 Interprofessional Education P 2-3

Focus on ethical issues, changing professional/consumer rights, and interprofessional cooperation.

3 cl. Repeatable to a maximum of 6 cr hrs.

700.01 Care of Patient/Client

Treatment of the whole person through the analysis of the interrelated problems of actual patients/clients.

Wi Qtr.

700.03 Ethical Issues

Ethical issues of concern to the professions and arising out of advanced technology: euthanasia, mind control, malpractice, social responsibility of the professions.

Sp Qtr. Limited to students enrolled in Law, Medicine, Nursing, Social Work, Theology (Columbus Seminars).

701† Advanced Legal Research P 3

Research techniques providing basic experience in analyzing legal questions, using appropriate publications, and in reaching competent solutions to legal problems.

702† Restitution P 3 or 4

Restitutionary remedies available for tort, misrepresentation, breach of contract, and for benefits conferred voluntarily, under duress or mistake, or in partial performance of contract.

704 Trial Practice P 1-4

Forensic skills developed through actual trial advocacy.

704.01 Trial Practice P 3

State and federal procedures in civil or criminal causes; individual student practice in the trial to jury of a civil or criminal case.

Prereq: 603 and 604, or written permission of instructor. Not open to students with credit for 704.02 or 704.03.

704.02 Trial Practice P 1-2

State and federal procedures in civil or criminal causes; individual student practice in the trial to a jury of a civil or criminal case.

1-2 cl; 2-qtr sequence; credit given on completion of 3 cr hrs. Prereq: 603 and 604, or written permission of instructor. Not open to students with credit for 704.01 or 704.03.

704.03 Trial Practice P 4

State and federal civil litigation, particularly pleadings, discovery, trial briefs, practical application of selected rules of evidence, and demonstrative evidence.

Prereq: 603 and 604, or written permission of instructor. Not open to students with credit for 704.01 or 704.02.

705 Debtor and Creditor Law P 3-4

Methods used for the liquidation of debtors' estates, emphasizing first seven chapters of the Bankruptcy Act.

706 Conflict of Laws P 3-4

Private law pertaining to jural relations containing one or more foreign elements; jurisdiction; foreign judgments; domicile; choice of law; torts; workmen's compensation acts; contracts; property; family law; decedents' estates.

707 Administration of Decedents' Estates P 3

Probate and contests of wills; jurisdiction; effect and necessity of administration; inventory and assets; contracts; sales and investments by personal representatives; claims; accounting and distribution.

708† Arbitration Law and Practice P 4

Commercial and labor arbitration under Ohio and federal arbitration statutes; drafting arbitration clauses; conduct of proceedings; arbitrable issues; court enforcement or impeachment of awards.

709 Regulation of Security Distributions P 3-4

Analysis of Security Act of 1933 and pervasive effects upon issuance of securities and transfers; study of exemptions and restrictions on transfer and value.

710 Federal Courts P 3-4

The Federal judicial system; jurisdiction of the district courts, courts of appeals, and United States Supreme Court.

713 Appellate Practice IV P 1-4

Procedural and substantive aspects of appellate practice; perfection of appeals; preparation of briefs and oral argument; participation by third-year students in various aspects of Moot Court Program. 1 to 4 cr hrs by arrangement with instructor. Repeatable to a maximum of 4 cr hrs with permission of the instructor. S or U grade given on completion of third-year Moot Court Program.

714 Receivership and Reorganization P 3

Equity receivership and corporate reorganization under Chapter X of the Bankruptcy Act; arrangements under Chapter XI of the Act.

Prereq: 607 or 632.

715 Federal Income Taxation of Closely-Held Corporations and Their Shareholders P 3

Tax aspects of incorporation of a business, dividend distributions, stock redemptions, complete and partial liquidations, and collapsible corporations.

Prereq: 606.

716† International Trade Regulation P 3

Extraterritorial application of United States trade regulation law, international treaties, and conventions, and trade regulation in European Common Market.

Prereq: 623.

718 Unfair Trade Practice P 3

Competitor, consumer, and administrative remedies for unfair business practices, including trademark infringement, trade secret appropriation, false advertising and disparagement, and copyright infringement.

719 Natural Resources P 4

The nature and incidents of public and private interests in water, minerals, oil and gas; conveyancing of natural resources, and mineral, oil and gas leasing.

720† Social Legislation P 4

Characteristics of statutory devices and their utility in effectuating social policy, with emphasis upon acts and bills dealing with employment, but including related private plans and nonemployment programs.

722† The Federal System P 3

Allocation of authority between federal and state law and courts; congressional power over the jurisdiction of courts; litigation involving the government or its agents.

723† Food and Drug Law P 3

Study of the development, administration and application of federal and state laws which regulate the manufacture, advertising, and sale of food, drugs, and cosmetics.

724 Comparative Criminal Law and Procedure P 3

Comparison of U.S. and Soviet criminal procedures, codes and case law, and resulting criminal justice.

727 Government Control of Industry P 3-4

Explanation of legal principles relevant to the rate regulation process and an analysis of other regulatory problems in the television, transportation, and atomic industries.

728 International Transactions P 3-4

Legal problems in transnational context arising from doing business abroad; investments; establishment; exchange controls; trade, licensing; extraterritoriality of regulatory legislation; international agreements; European Common Market.

729 Administrative Practice P 4

Types of action before administrative boards and commissions; primary jurisdiction; defining policy; judicial jurisdiction; right to trial hearing; obtaining judicial review; scope of review; evidence; decision-making.

731 Business Planning P 3

Advanced study in corporations and taxation of corporations and shareholders.

3 cl, 2-qr sequence; credit given on completion of 6 cr hrs. Prereq: 606, 607, or 632; 628 recommended.

732 Environmental Law P 3

Legal problems relating to the living environment; legal problems of conservation of resources such as forest, wildlife, soil and parks.

733 Political and Civil Rights I P 3

Advanced study of constitutional guarantees in contemporary social milieu; freedom of expression, association; academic freedom; advocacy and symbolic expression.

734 Political and Civil Rights II P 3

Advanced study of civil rights and legal problems of race relations in contemporary social milieu; segregation; discrimination; equal protection; separatism.

735 Law Journal P 1 or 3

Special studies covering diverse subjects of a legal nature participated in by the group selected for work on the Law Journal.

Prereq: Selection for Law Journal by editors.

Repeatable to a maximum of 6 cr hrs. Students may earn up to 3 cr hrs for Law Journal participation prior to the beginning of the seventh quarter, and may earn an additional 3 cr hrs for participation in the three final quarters of academic residence.

736 Legal Profession P 1-4**736.01 Legal Profession P 1**

Consideration of the Code of Professional Responsibility.

S or U grade on completion. Not open to students with credit for 736.02.

736.02 Legal Profession P 3 or 4

Legal and ethical problems of the legal profession and the practicing lawyer, including: unauthorized practice, bar admission, group legal services, malpractice, professional organization, and discipline.

Not open to students with credit for 736.01.

737* Patent Law P 3

Fundamentals of substantive patent law relating to standards of patentability, patent claim interpretation, licensing, and enforcement presented in reference to patent litigation.

738 Study and Practicum in Legal Problems

Pursuant to the New York Court of Appeals Rules for Admission to Practice, students who enroll for more than 12 cr hrs may be ineligible for admission to practice in New York. No student may enroll in more than 24 cr hrs.

Advanced study and training in performance of legal services for the poor under supervision of clinical faculty and staff attorney.

738.01 Criminal Defense Practicum P 3 or 6

Development of the basic knowledge and skills of criminal law practice.

3 or 6 cl, 1- or 2-qr sequence; Prereq or concur: 603 plus one or more of the following: 642.04, 642.03, 633, 640, 641, or with written permission of instructor. May not be taken simultaneously with any other practicum except 738.03.

738.02 Poverty Law Practicum P 3 or 6

Development of the basic knowledge and skills of civil law practice on behalf of the poor.

3 or 6 cl; 1- or 2-qr sequence; S or U grade given on completion of 6 cr hrs. Prereq or concur: 642.01. May not be taken simultaneously with any other practicum except 738.03.

738.03† Welfare Law Practicum P 2

Supervised clinical study of welfare problems.

S or U grade given on completion of 2 cr hrs. Prereq or concur: 796.29. Repeatable to a maximum of 4 cr hrs with permission of instructor.

738.04† Juvenile Law Practicum P 2-4

Study of the intricacies of the juvenile intake process, difficulties of dealing with a total family situation involving child neglect or juvenile delinquency, and substantive legal problems of the juvenile area.

2-4 cl; 1- or 2-qr sequence; S or U grade given on completion of 2-4 cr hrs. Prereq: None; 634, 640 and/or 641 recommended.

738.05 Criminal Appeals and Postconviction Remedies Practicum P 1-3

Supervised clinical course emphasizing the knowledge and skills needed in the criminal appellate and postconviction processes.

1-3 cl; Prereq or concur: 603 plus one or more of the following: 642.04, 642.03, 633, 640, 641, or with written permission of instructor. Opened principally to students who intend to enroll in 738.01.

Repeatable to a maximum of 5 cr hrs with written permission of instructor.

738.06† Consumer Protection Law Practicum P 6

Study of specific problems of consumer fraud and deception, and participation in the investigation and prosecution of selected civil and criminal cases.

S or U grade given on completion of the course.

Prereq: 718.

738.07 Civil Liberties Practicum P 1-3

Supervised clinical course involving study of problems peculiar to civil liberties law practice including handling of selected cases involving civil liberties.

1-3 cl; 2-qr sequence; S or U grade given on completion of 4 cr hrs. Prereq: None; 733 and 734 recommended.

738.08 Prisoner Status Practicum P 1-3

Supervised clinical course emphasizing skills in representation of inmates before relevant bodies such as the parole board.

1-3 cl; 2-qr sequence; S or U grade given on completion of 4 cr hrs.

738.09 Housing and Employment Discrimination Practicum P 1-3

Supervised clinical study, including work on selected cases, with emphasis on housing and/or employment discrimination.

1-3 cl; 2-qr sequence; S or U grade given on completion of 4-6 cr hrs.

738.10 Group Legal Services Practicum P 1-6

Supervised clinical study, including work on selected civil and criminal cases derived from a group legal services program.

1-6 cl, 1- or 2-qr sequence.

738.11 Mental Disability and the Law Practicum P 3-6

Supervised clinical study of the interrelationship between mental disability (mental illness and mental retardation) and the law.

2-qr sequence; S or U grade given on completion of 6 cr hrs. Prereq: 636, or permission of instructor.

738.20 Selected Legal Problems Practicum P 1-6

Topics will change as specially scheduled in any quarter.

1-4 cl; 1-, 2-, or 3-qr sequence; S or U grade given on completion of the course. Repeatable to a maximum of 12 cr hrs.

739† African Law P 3

Study of selected fundamental problems of legal development in context of evolving African countries, relationship between legal change and policies of social and economic development.

740† Internal Union Affairs: Rights, Duties, and Remedies of Union Members P 3

Detailed examination of the relationship between an individual union member and his union, with particular focus on union disciplinary procedures, employment rights and the union electoral process.

Prereq: 613 or 630.

741 Federal Tax Procedure and Administration P 3

Internal Revenue Service audits and investigations; administrative rule-making and interpretation; civil and criminal litigation; limitations and mitigation of effect; collection; interest; additions; penalties.
Prereq: 606.

742 Estate Planning P 3

Functional integration of legal concepts concerning transmission of individual and family wealth; advanced consideration of wills, trusts, gifts, future interests, emphasizing tax aspects of estate planning. 2-qtr sequence; credit on completion of 6 cr hrs.
Prereq: 656 or 506 prior to September 1975. Not open to students with credit for 617 or 631.

793 Individual Studies P 1-6

By special arrangement with the dean's office, special problems or projects may be taken for credit under the supervision of members of the faculty. The credit granted varies in proportion to the magnitude of the project. In general, assignment of special problems will be limited to instances of exceptional student specialization, scheduling difficulties, and curricular irregularity.

S or U grade on completion of assigned work.

794 Group Studies P 1-6

Group study in selected areas of the law.
Repeatable to a maximum of 20 cr hrs.

796 Seminars P 1-4

Small group study and training in legal and non-legal research, expository writing, and various litigious and non-litigious functions of the practicing lawyer. 1-4 cr; 1- or 2-qtr sequence; for sequence seminar, credit given on completion of total cr hrs assigned.

796.01† Antitrust Law and Economics

Evaluation of domestic antitrust law on the basis of current economic theories. Interdepartmental seminar of the Dept of Economics and the College of Law.

Prereq: 623.

796.03 Constitutional Problems

Advanced constitutional questions, including evolution of judicial review, intergovernmental relationships, protection of civil liberties, special problems under Ohio Constitution.

796.04† Social Legislation

The legislative and administrative devices for ameliorating hardship and misfortune in an urbanized, industrialized society with emphasis upon income substitute and service programs.

796.05† Legal Problems of Foreign Trade and Investment

Problems encountered by American business enterprises engaged in foreign trade or investment.

796.06† Legal Regulation of Business Practice

Regulation of competitive practices through legislative, administrative, and judicial action; equality of opportunity for small business; the Robinson-Patman Act.

796.07 Legal Regulation of Devolution of Property

Socio-legal problems raised by devolution of wealth through such arrangements as public welfare programs, union welfare funds, insurance, foundations, charitable trusts, and pension trusts.

796.08† Problems in the Law of Evidence

Advanced evidentiary questions involved in preparation for and trial of cases.

796.09† Problems in Local Government Finance

Taxing by and financing of local government units, including power of and procedure for taxing, expending funds, financing improvements or services.

796.10† Problems in Public Contracts

Types of government contracts; governmental authority to make contracts; limitations; advertising; bids and awards; formal requisites; standard clauses; contractors' bonds; performance and termination; liabilities.

796.12 Legal and Economic Problems in State and Local Taxation

State taxation and intergovernmental tax relations in terms of law and fiscal economics. Offered in cooperation with the Dept of Economics.

796.13 Medical-Legal Problems

Conflict in concept between disciplines of law and medicine in matters of causation, injury, disability, prognosis, aggravation and re-injury related to their use in proof of such elements in litigation.

796.15† Comparative Labor Law

Problems in American labor law viewed from the standpoint of both American and foreign law; collective bargaining; the use of economic force; internal and inter-union affairs.

Prereq: 613 or 630.

796.16 Right of Privacy

Individual's interests in freedom from publicity and in physical seclusion; particularly legal response to social and technological changes which threaten these interests.

796.17† Regulated Industries

Principal regulatory agencies, both federal and state, with respect to licensing, rate-making, mergers, and general supervision of business practices.

796.19† Selected Problems in Criminal Law and Procedure

Purposes and effects of punishment; wiretapping; Uniform Arrest Act; right to counsel; habeas corpus and other postconviction remedies; treatment of criminal cases by mass communications.

796.20 Research Seminar in Law

Topics will change as specially scheduled in any quarter.

Repeatable to a maximum of 6 cr hrs.

796.21† Legal Controls of the Economy

Study of state and federal legislation affecting economic activity, including employment acts, antipoverty legislation, tariffs, financing laws, and legal basis of the Federal Reserve System.

796.22† Legal Implementation of Social Policy

Interdisciplinary research and field work in institutions protective of children.

796.23† Jurisprudential Approaches to Decision Making

Considerations of conceptions of the role of law and lawyers in decision processes, with emphasis upon clarification of goal values, drawing on contemporary behavioral and communications sciences, in order to develop problem-solving tools and procedures.

796.25† Problems of Administrative Law

An examination in detail of some of the more troublesome aspects of contemporary executive and administrative operations at federal and state levels.

Prereq: 729 recommended.

796.27† International Criminal Law

Jurisdiction of tribunals over individuals committing acts considered criminal under international law but not local law; defenses urged; examination of piracy and war crimes.

796.28 Socio-Economic Environment of Law

An examination of selected aspects of the socio-economic environment which affects the scope, content, and effectiveness of legal practice, rules and institutions.

796.29† Welfare Law

Legal and policy problems of welfare law and welfare administration.

796.30† Urban Studies

Legal problems confronting inhabitants of major urban cities; effect on urban redevelopment; legal rights of services for poor.

796.31† Housing and Urban Development

Operation of and legal problems confronting governmental agencies concerned with housing and urban development in local communities.

796.32† Insurance

Organization and regulation of insurance carriers and marketing arrangements; rate-making; investment practices; reinsurance; solvency, rehabilitation and liquidation of companies.

796.33 Jurimetrics

Study of the use of mathematical techniques and computer systems in legal analysis, legal research, and judicial administration.

796.35† Law and Economic Development

Study of the relationship between legal institutions and economic development; comparison of economic growth of the United States and developing nations.

796.38 Legal Aspects of Totalitarian Government

Study of restrictions and impact of citizens' human, civil, political rights in totalitarian regimes; comparison with U.S. theory and practices; analysis of international agreements, policy.

796.39 Business Planning

Planning and drafting in field of business association; principally concerned with problems in general and limited partnerships, business trusts, and closely-held corporations.

796.40† Estate Planning

Planning an effective and economical gift distribution of property interests; consideration of techniques and restrictions suggested by law of property, wills, future interests, insurance, and taxation.

796.41† Federal Tax Planning

Tax problems in business organizations, corporations, partnerships, and individual estates.

Prereq: 606.

796.42† General Legal Planning

Representative types of personal and business transactions which confront general practitioner, including contracts, partnership agreements, purchase agreements, sales agreements, deeds, wills, and trusts.

796.44 Legislative Planning

Role of lawyer in advocating or opposing state and federal legislation; problems selected from past and current proposals before legislature.

Prereq: 629. Repeatable to a maximum of 6 cr hrs.

796.45 Planning Seminar in Law

Topics will change as specially scheduled in any quarter.

Repeatable to a maximum of 6 cr hrs.

796.46† Legal Administration of Natural Resources

Study of administration techniques for control and conservation of natural resources; consideration of problems of regulation, finance, management, and taxation.

Prereq: None; 719 or 732 recommended.

796.47 Securities Regulation

Study of recent legal developments affecting security trading market, brokers, exchanges and NASD, investment companies, and other institutional investors.

Prereq: 709. Must enroll to a maximum of 4 cr hrs.

796.48 Trade Regulation

Study of current problems of trade regulations, e.g. antitrust, unfair trade practices, patents, food and drug law.

Prereq: By designation of instructor. Must enroll to a maximum of 6 cr hrs.

796.50† Legal Profession

Selected topics on the study of the legal profession with emphasis on behavioral sciences approaches including comparisons with other occupations and professions.

796.51† Social and Environmental Litigation

Study of impact of law on social and environmental problems with emphasis on procedure and choice of remedies.

Prereq: None; 710 and 719 recommended.

796.52 Federal Criminal Law

The relationship of federal and state criminal law; historical role and specialized problems of federal criminal law.

796.53† Law in the Soviet Union

Comparison of Soviet and United States law and legal institutions in selected areas, such as personal freedoms, regulation of commerce.

796.54† The Mentally Retarded and the Law

Study and interdisciplinary research into special and legal problems of the mentally retarded.

796.55† Consumer Credit

Consumer credit; statutory and judicial regulation, with particular emphasis on the problems of the poor consumer.

Prereq: 605, 609, or 610.

796.57† Public Employment

Research and writing on selected problems in public employment labor relations.

796.58 Law and the Political Process

Exploration of the lawyer's role in the political process; the relationship of political parties to the election process; and the interplay of legal requirements and the campaign and voting procedures.

796.59 International Business Planning P 3

Negotiating and planning the organization of a foreign mineral concession with the participation of multi-national firms. Tax, patent, antitrust, securities regulation, and international law problems will be explored.

2-qr sequence; credit given on completion of 6 cr hrs.

796.60 Group Legal Services Programs P 3

Study of group legal services programs as a system for the delivery of legal service.

797 Interdepartmental Seminars P 1-5

Linguistics

Office: 204 Dieter Cunz Hall of Languages, 1841 Millikin Road, 422-4052

See also the course listings in English, the foreign languages, Romance Linguistics.

201 Introduction to Language U 5

A survey of language as a system of human communication; topics include meaning, language structure, sound systems, language change and acquisition, language in society.

Su, Au, Wi, Sp Qtrs. 5 cl.

230 Sexism in Language U 5

Types of sex differentiation in different languages and their social and symbolic consequences. Callaghan.

Sp Qtr. 5 cl.

261 Language in Society U 5

Nature of language variation and the social factors affecting the use of language, e.g. age, sex, social class, ethnic group, social context.

Wi Qtr. 5 cl. Prereq: 201.

271 Elements of Psycholinguistics U 5

Linguistics and the structure, acquisition, function, and malfunction of language.

Sp Qtr. 5 cl. Prereq: 201.

285 Language Change and Development U 5

Survey of the kinds of linguistic change; discussion of the external influences (social, cultural, political, etc.) that affect the historical development of languages.

Sp Qtr. 5 cl. Prereq: 201.

294 Group Studies U 5

Introductory topics in linguistics.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs.

600 Phonetics U G 5

Principles of articulatory phonetics, with some discussion of acoustic phonetics; practice in the production, recognition, and transcription of sounds in various languages of the world.

Au Qtr. 5 cl. Prereq or concur 601, or an equiv course in linguistics or phonetics.

601 Introduction to Linguistics U G 5

A broad introduction to general linguistics: survey of phonological, morphological, syntactic, and semantic analysis, and of historical and comparative linguistics.

Su, Au, Wi, Sp Qtrs. 5 cl.

602 Introduction to Syntax U G 5

Theories of syntax; principles of syntactic description.

602.01 Introduction to Syntax I

Au Qtr. 5 cl. Prereq: 601.

602.02 Introduction to Syntax II

Wi Qtr. 5 cl. Prereq: 602.01.

603 Introduction to Phonology U G 5

Introduction to phonological analysis and the principles governing the structure, acquisition, and change of phonological systems; survey of major phonological theories.

603.01 Introduction to Phonology I

Wi Qtr. 5 cl. Prereq: 600 and 601.

603.02 Introduction to Phonology II

Sp Qtr. 5 cl. Prereq: 603.01.

609 Morphology U G 5

The grammatical and phonological analysis of words, and their significance in linguistic structure.

Sp Qtr. 5 cl. Prereq: 601 or permission of instructor.

611 Introduction to Historical Linguistics U G 5

Introduction to the methods and principles of historical linguistics.

Sp Qtr. Prereq: 601.

621†* Elementary Sanskrit U G 5

Introduction to Indo-European, Indic, and Sanskrit; reading of introductory texts.

Au Qtr.

622†* Classical Sanskrit U G 5

Reading of classical Sanskrit texts.

Wi Qtr. Prereq: 621 or permission of instructor.

623†* Topics in Indic Linguistics U G 5

Possible topics include advanced classical Sanskrit, introductory Vedic Sanskrit, Indo-Iranian or Indo-Aryan linguistics, or studies in the ancient Indian grammarians.

Sp Qtr. Prereq: 622 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

650 Field Methods in Linguistics

650.01 Field Methods I U G 4

Methodology for determining the phonological system of a previously unknown language through the use of a native informant.

Wi Qtr. 4 cl. Prereq: 600 or permission of instructor.

650.02 Field Methods II U G 3

Methodology for determining the morphological system of a previously unknown language through the use of a native informant.

Sp Qtr. 3 cl. Prereq: 650.01.

661 Sociolinguistics U G 5

Description and explanation of the interaction between linguistic and social factors in language.

Au Qtr. 5 cl. Prereq: 601 or permission of instructor.

671 Psycholinguistics U G 5

The contribution of linguistic theory to the study of the acquisition, maturation, and functioning of language skills.

Sp Qtr. 4 cl. Prereq: 603.02.

672† Language Description U G 3-5

Informant techniques and (if available) textbooks and published linguistic analyses are employed in analyzing and describing a language.

Au, Wi, Sp Qtrs. 3-5 cl. Prereq: 601. Repeatable to a maximum of 30 cr hrs.

673† History of Linguistics U G 5

Historical survey of views on language; examination of linguistic thought in historical periods, or of writings on single topics in diverse periods and traditions.

Sp Qtr. 5 cl. Prereq: 601.

681†* Algebraic Linguistics U G 5

Formal properties of grammar and automata; relations between linear, context-free and context-sensitive grammars and finite, pushdown-storage and linear-bounded automata; properties of transformational grammars.

Wi Qtr. 5 cl. Prereq: 601 and permission of instructor.

683 Linguistic Semantics U G 5

Problems and methods of analysis in linguistic semantics and pragmatics; use of formal logic and semantic model theory in analyzing natural languages.

Sp Qtr. 5 cl. Prereq: 682 or equiv.

685 Languages in Contact U G 3

Study of the effects of language contact on the structure of the involved languages; of the characteristics of the individuals and communities involved in language contact.

Wi Qtr. 3 cl. Prereq: 601.

693 Individual Studies U G 1-5

Su, Au, Wi, Sp Qtrs. Prereq or concur: 601 or permission of instructor. Repeatable to a maximum of 40 cr hrs.

694 Group Studies U G 1-5

Study of topics not regularly scheduled for seminars in linguistics, under the direction of a staff member.

Su, Au, Wi, Sp Qtrs. Prereq: 601. Repeatable to a maximum of 30 cr hrs.

695 Seminar in Anthropological Linguistics U G 5

Callaghan.

Au Qtr. Prereq: Anthro 675 or permission of instructor. Repeatable to a maximum of 20 cr hrs.

H783 Honors Course U 3-5

Informal conferences to allow full scope to the initiative of the student, who will prepare an Honors thesis in consultation with the instructor.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing and the completion of departmental honors requirements with a grade of A in at least half of the linguist courses, including approved related courses; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degree BA *with distinction* in linguist. Repeatable to a maximum of 15 cr hrs.

795 Seminar in Linguistics U G 3-5

A selected group study, with emphasis on individual writing and presentation.

Au, Wi, Sp Qtrs. 3-5 cl. Prereq: 602 and 603 or permission of instructor. Repeatable to a maximum of 20 cr hrs.

800 Proseminar in Linguistics G 3

Introduction to the problems, methods, and tools of linguistic research.

Au Qtr. 2 cl. Required of all candidates for graduate degrees.

801* Historical Linguistics I G 5

An introduction to the methods, conventions, and literature of comparative-historical linguistics with primary attention to the comparison and reconstruction of Indo-European phonological systems.

Au Qtr. 5 cl. Prereq: 601, and either 611 or written permission of instructor.

802* Historical Linguistics II G 5

Advanced work in the comparison and reconstruction of morphological, and syntactic systems, primarily Indo-European; detailed examination of some of the results of past and current scholarship.

Wi Qtr. 5 cl. Prereq: 801.

803† Topics in Indo-European G 5

Study of various Indo-European languages and language families and exploration in depth of specific problems in Indo-European grammar.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 802. Repeatable to a maximum of 30 cr hrs.

812 Seminar in Semantics G 5

Accounts of semantic judgments in languages, especially within the theory of generative grammar; relationships between syntax, semantics, and language use.

Sp Qtr. 5 cl. Prereq: 602.02; a course in symbolic logic recommended. Repeatable to a maximum of 15 cr hrs.

820 Seminar in Syntax G 5

Advanced topics in syntactic analysis.

Sp Qtr. Prereq: 602.02. Repeatable to a maximum of 15 cr hrs.

821 Seminar in Phonology G 5

Advanced topics in phonological analysis.

Sp Qtr. Prereq: 603.02. Repeatable to a maximum of 15 cr hrs.

822 Seminar in Historical Linguistics G 5

Advanced topics in methods and principles of diachronic analysis.

Wi Qtr. Prereq: 611 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

825 Seminar in Advanced Phonetics G 5

Study of specific problems in articulatory and acoustic phonetics at an advanced level.

Au Qtr. 3 cl, 2 lab hrs. Prereq: 600, 601, and permission of instructor. Repeatable to a maximum of 20 cr hrs.

993 Individual Studies G 1-5

Assigned reading and individual research.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

999 Research in Linguistics G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

Mathematics

Office: 150 Mathematics Building, 231 West 18th Avenue, 422-4975

100 Introduction to College Mathematics U 5

Arithmetic of fractions and decimals, basic algebra, graphing equations, geometry.

Su, Au, Wi, Sp Qtrs. 5 cl. Intended only for students with Level 5 placement on OSU Math Placement Test; others with permission of instructor. Credit may not count toward graduation in some degree programs.

102 Basic College Mathematics I U 4

Inequalities, absolute value, systems of equations, arithmetic of polynomials, factoring, quadratic equations, functions and graphs.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 100 or placement on basis of OSU Math Placement Test. Not open to students with cr for any math course except 100 or 180. 102 and 103 are equiv to 101.01 and 101.02. Credit may not count toward graduation in some degree programs.

103 Basic College Mathematics II U 4

Fractional equations, variation, exponents and radicals, equations involving radicals, complex numbers, quadratic formula, distance, graphs of quadratic functions.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 102 or placement on basis of OSU Math Placement Test. Not open to students with cr for any math course except 100, 102, or 180. 102 and 103 are equiv to 101.01 and 101.02.

105 Mathematics for Elementary Teachers I U 5

Development of basic ideas of arithmetic, algebra, and geometry as appropriate for elementary school teachers.

Su, Wi, Sp Qtrs. 5 cl. Prereq: 102 or satisfactory score on OSU Math Placement Test.

106 Mathematics for Elementary Teachers II U 5

Continuation of 105.

Su, Au, Sp Qtrs. 5 cl. Prereq: 105 or written permission of dept.

107 Topics in Mathematics for Elementary Teachers U 5

Further topics in mathematics selected by the instructors to broaden the mathematical perspectives of elementary teachers.

Au Qtr. 5 cl. Prereq: 106 or written permission of dept.

116 Survey of College Algebra U 5

The sequence 116, 117 treats topics applicable to non-physical sciences; topics in 116 include college algebra, analytic geometry, linear algebra, linear programming and graph theory.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 102 or satisfactory score on OSU Math Placement Test. Not open to students with credit for 120.01, 121, 130, 148, 150, 159.01.01 or math courses having these as prerequisites.

117 Survey of Calculus U 5

An introduction to differential and integral calculus.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 116 or 121 or 120.01 or 130 or 148 or 150 or 159.01 or equiv with written permission of dept. Not open to students with credit for 120.04, 122, 131 or 152.

130 Elements of Algebra U 4

Equations, inequalities, absolute value, functions, exponential and logarithmic functions, systems of equations, and matrix algebra.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 103 or satisfactory score on OSU Math Placement Test. Not open to students with credit for 116, 120.01, 148, 150 or 159.01.

131 Elements of Calculus I U 4

Limits, tangent lines, continuity, differentiability, Mean Value Theorem, graphing techniques, sequences, series, Taylor's Theorem, definite integral, Fundamental Theorem of Calculus, applications of calculus to business.

Su, Au, Wi, Sp Qtrs 4 cl. Prereq: 130 or 148 or 150 or written permission of department. Not open to students with credit for 120.02, 121 or 151.

132 Elements of Calculus II U 4

Antiderivatives, techniques of integration, calculus of the logarithmic and exponential functions, surfaces in E^3 , partial derivatives, Lagrange multipliers, applications of calculus to business.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 131 or 151 or written permission of dept. Not open to students with credit for 122 or 152.

148 College Algebra U 4

Basic properties of real numbers, graphing, functions and relations, inverse functions, exponential and logarithmic function, and applications.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 103 or satisfactory score on OSU Math Placement Test. Not open to students with credit for 120.01, 130, 159.01 or 150. Math 148 and 149 are equiv to Math 150.

149 Trigonometry U 4

Trigonometry and complex numbers.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 148 or 159.01 or 120.01 or written permission of dept. Not open to students with credit for 150 or 159.02. Math 148 and 149 are equiv to Math 150.

150 Algebra and Trigonometry U 5

Inequalities, functions, graphs, exponential, logarithmic and trigonometric functions and their graphs, complex numbers, inverse functions.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: Level 2A score on OSU Math Placement Test or permission of dept. Not open to students with credit for 120.01, 121, 130, 148, 149, 159.01, 159.02, or math course having these as prerequisites.

151 Calculus and Analytic Geometry U 5

Lines, slopes, derivatives, limits, mean-value theorem; applications of derivatives to curve sketching, maxima and minima, linear motion, related rates, and approximations; antidifferentiation.

Su, Au, Wi, Sp Qtrs. 5 cl. H151 (honors) may be available to students enrolled in an honors program; others with written permission of dept. Prereq: 150 or Level 1 placement on OSU Math Placement Test. Not open to students with credit for 159.03, 159.04, or math courses having these as prerequisites.

152 Calculus and Analytic Geometry U 5

The definite integral, fundamental theorem of calculus; area, volume, other applications of integration; inverse functions; logarithmic, exponential, trigonometric, inverse trigonometric, and hyperbolic functions; integration techniques.

Su, Au, Wi, Sp Qtrs. 5 cl. H152 (honors) may be available to students enrolled in an honors program; others with written permission of dept. Prereq: 151.

153 Calculus and Analytic Geometry U 5

Additional techniques of integration; polar coordinates; the conic sections; three-dimensional vectors; parametric equations; multiple integration; quadric surfaces.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 152.

180 Insights into Mathematics U 5

A liberal arts course intended to involve students with mathematics, rather than to develop computational and problem-solving skills; topics chosen by the instructor.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: Sophomore standing or permission of dept.

187 Topics in Mathematics U 2-5

An enrichment course for interested and capable students.

Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 6 cr hrs.

H190 Elementary Analysis I U 5

Special course sequence for superior students.

Au Qtr. 5 cl. Prereq: Permission of dept. H190, H191, H192 substitutes for Math 151, 152, 153, 254, and 551.

H191 Elementary Analysis II U 5

Continuation of 190.

Wi Qtr. 5 cl. Prereq: Permission of dept.

H192 Elementary Analysis III U 5

Continuation of 191.

Sp Qtr. 5 cl. Prereq: Permission of dept.

221 *Elements of Calc III* Fundamental Mathematics III U 5

A continuation of 122, several variable calculus with business applications.

Au, Sp Qtrs. 5 cl. Prereq: 152 or equiv with written permission of dept. Not open to students with credit for 254. Not recommended for students earning less than a grade of B in 122.

254 Calculus and Analytic Geometry U 5

Review of vectors and quadric surfaces; differential calculus of several variables; indeterminate forms; improper integrals; surface area; sequences and series.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 153.

255 Differential Equations and Their Applications U 5

Basic concepts and methods in solving ordinary differential equations, first and second order, linear differential equations, series solutions, numerical methods, Laplace transforms, physical applications.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 254. Not open to students with credit for 256, 415 or 556. Not recommended for mathematics majors.

256 Differential Equations with Applications U 4

First order differential equations, linear equations with constant coefficients, systems of linear equations, applications to vibrations problems, and electrical networks.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 254. Not open to students with credit for 255, 415, or 556.

H263 Calculus U 5

Multivariate calculus (vector approach), line and surface integrals, vector differential operators.

Sp Qtr. Prereq: Written permission of dept. H263, H264, H265 substitute for 254, 547, 548, and 551.

H264 Calculus U 5

A rigorous treatment of differentials, Jacobians, line integrals, multiple integrals, and Fubini's theorem.

Au Qtr. Prereq: H163 or H263.

H265 Calculus U 5

Stokes' theorem, Green's theorem, changes of variables, implicit and inverse function theorems.

Wi Qtr. Prereq: H264.

H290 Linear Algebra and Multivariable Calculus I U 5

H290, H291, H292 is an integrated sequence in linear algebra, matrix theory, multivariable calculus, ordinary and partial differential equations, and complex analysis.

Au Qtr. 5 cl. Prereq: H192 or equiv with written permission of dept.

H291 Linear Algebra and Multivariable Calculus II U 5

Continuation of H290.

Wi Qtr. 5 cl. Prereq: H290 or equiv with written permission of dept.

H292 Linear Algebra and Multivariable Calculus III U 5

Continuation of H291.

Sp Qtr. 5 cl. Prereq: H291 or equiv with written permission of dept. The sequence H290, H291, H292 replaces 264, 265; 255 or 415 or 256; 513 and 514 or 416.

294 Special Topics in Mathematics U 2-5

Designed to give groups of able students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 10 cr hrs.

345 Foundations of Higher Mathematics U 4

Designed to prepare students for higher mathematics; an introduction to logic, proof techniques, set theory, number theory, integers, real numbers, transfinite numbers.

Au, Sp Qtrs. 5 cl. Prereq: 254 or equiv with written permission of dept.

415 Ordinary and Partial Differential Equations U 5

Ordinary, partial, linear, and non-linear differential equations, Fourier series, boundary value problems, eigen-value theory, and Bessel functions.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 254. Not open to students with credit for 255, 256, 556.

416 Vector Analysis and Complex Variables U 5

Vector algebra and vector operators, line integrals, analytic functions, complex integral theorems, power series, residues, and conformal mapping.

Au, Sp Qtrs. 5 cl. Prereq: 254. Not open to students with credit for 551, 556, 513 or 514.

471 Matrices and Linear Algebra U 5Matrices, systems of equations, R^n , determinants, vector spaces; applications.

Au, Wi Qtrs. 5 cl. Prereq: 153, 221 or equiv with written permission of dept. Not open to students with credit for 571, 576, or 568.

501 Fundamentals of Mathematics I U G 4

The integrated sequence 501, 502, and 503 covers the calculus of one and several variables with applications to statistics, economics, and the social sciences.

Au Qtr. 4 cl. Prereq: Written permission of dept. Not open for grad credit to majors in math. This course is intended for advanced students in areas other than the mathematical and physical sciences.

502 Fundamentals of Mathematics II U G 4

A continuation of 501.

Wi Qtr. 4 cl. Prereq: 501.

503 Fundamentals of Mathematics III U G 4

A continuation of 502.

Sp Qtr. 4 cl. Prereq: 502.

504 History of Mathematics U G 5

Development of mathematics from primitive origins to present form; topics include: development of arithmetic, algebra, geometry, trigonometry, and calculus.

Au, Sp Qtrs. 5 cl. Prereq: 580 or 571 or 568 or 507 or equiv with written permission of dept.

507 Advanced Geometry I U G 5

Advanced topics from Euclidean Geometry.

Au, Wi Qtrs. 5 cl. Prereq: 152.

510 Topics in Mathematics for Elementary School Teachers U G 2-5

Special topics in mathematics appropriate for teachers in the primary and intermediate grades.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs for each decimal subdivision with written permission of dept. Designed primarily for in-service teachers.

510.01 Geometry

510.02 Properties of Numbers

510.03 Numerical Methods

512 Partial Differential Equations and Boundary Value Problems U G 3

Among the topics considered are: Fourier series, orthogonal relations, vibrating string, steady state heat, Laplace transform, and applications.

Au, Wi Qtrs. 3 cl. Prereq: 255 or 256 or 415 or 556 or equiv with written permission of dept. Not open to students with credit for 557.

513 Vector Analysis for Engineers U G 3

Vector algebra, vector operators, line integrals, vector integral theorems, curvilinear coordinates; applications.

Wi Qtr. 3 cl. Prereq: 254. Not open to students with credit for 551.

514 Complex Variables for Engineers U G 3

Introduction to complex variables, analytic functions, complex integral theorems, power series, residues, conformal mapping.

Sp Qtr. 3 cl. Prereq: 513 or equiv with written permission of dept. Not open to students with credit for 416, 552 or 654.

530 Probability I U G 5

Combinatorial probability, examples of distributions, expectation, variances, generating functions, laws of large numbers, central limit theorem.

Au Qtr. 5 cl. Prereq: 254.

531 Probability II U G 5

Continuation of 530; Markov chains, stochastic processes.

Wi Qtr. 5 cl. Prereq: 530.

545 Mathematical Logic I U G 5

Introduction to formal logical systems with applications to mathematical foundations. Topics include: mathematical proof; statement calculus; predicate calculus; first order number theory; consistency; completeness.

Wi Qtr. 5 cl. Prereq: 153 or equiv with written permission of dept.

546 Mathematical Logic II U G 5

Advanced topics in first order theories: Such as Goedel's completeness and incompleteness theorems; model theory; recursive function theory; abstract machines; set theory.

Sp Qtr. 5 cl. Prereq: 545.

547 Introductory Analysis I U G 3

The first of a three-course sequence designed to develop analytic intuition and proof skills; student participation is emphasized; real numbers, sequences, series, continuous functions.

Su (1st term), Au, Wi Qtrs. 3 cl. Prereq: 254 or equiv

with written permission of dept. Not open to students with credit for 550.

548 Introductory Analysis II U G 3

Continuation of 547; sequences of functions, differentiation, the Riemann integral.

Su (2nd term), Wi, Sp Qtrs. 3 cl. Prereq: 547 or equiv with written permission of dept. Not open to students with credit for 550.

549 Introductory Analysis III U G 3

Continuation of 548; the Riemann-Stieltjes integral; an introduction to the calculus of several variables.

Sp Qtr. 3 cl. Prereq: 548 or 550 or equiv with written permission of dept.

550† Advanced Calculus I U G 5

A rigorous presentation of limits, derivatives, mean value theorems, definite integrals, sequences, and series.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 254 or equiv with written permission of dept.

551 Vector Analysis U G 5

Vector operations in three dimensions, vector operators, surface area, the theorem of Green and Stokes, the divergence theorem; applications.

Au, Sp Qtrs. 5 cl. Prereq: 254. Not open to students with credit for 416, 513, 551.01, or 551.02. Not recommended for math majors.

552 Introduction to the Theory of Functions of a Complex Variable U G 5

Topics discussed include power series expansions, the formula of Cauchy, residues, conformal mappings, and elementary functions in the complex domain.

Su, Wi Qtrs. 5 cl. Prereq: 254. Not open to students with credit for 416, 514, 552.01, or 552.02. Not recommended for math majors.

553† Introduction to the Theory of Functions of a Complex Variable II U G 5

A continuation of 552.

Sp Qtr. 5 cl. Prereq: 552.

556 Differential Equations I U G 3

First and second order equations; series and approximate solutions of linear equations; existence and uniqueness of solutions.

Wi Qtr. 3 cl. Prereq: 254. Not open to students with credit for 556.01 or 556.02.

557 Differential Equations II U G 3

Systems of first order equations; qualitative theory for ordinary differential equations; introduction to partial differential equations and boundary value problems.

Sp Qtr. 3 cl. Prereq: 556.

560 Topology U G 5

Sets and functions, metric spaces, completeness, Baire's Theorem, continuous mappings, Euclidean spaces, compactness, connectedness, topological spaces.

Sp Qtr. 5 cl. Prereq: 547 or equiv with written permission of dept.

568 Linear Algebra I U G 3

The space \mathbb{R}^n and its subspaces; matrices as mappings; matrix algebra; systems of equations; determinants; dot product in \mathbb{R}^n ; geometric interpretations.

Su (1st term), Au, Wi, Sp Qtrs. 3 cl. Prereq: 153 or equiv with written permission of dept. Not open to students with credit for 471, 576, or 571.

569 Linear Algebra II U G 3

Vector spaces over \mathbb{R} and \mathbb{C} ; linear transformations; the polynomial ring $\mathbb{R}[x]$; characteristic values and vectors; inner product spaces; quadratic form reduction; principal axis theorem.

Su (2nd term), Wi, Sp Qtrs. 3 cl. Prereq: 568 or equiv with written permission of dept. Not open to students with credit for 471, 576, or 571.

571† Introduction to Linear Algebra U G 5

Vector spaces, linear maps, matrices, inner product spaces, systems of equations, determinants, and spectral theory.

Su, Wi, Sp Qtrs. 5 cl. H571 (honors) may be available to students enrolled in an honors program; others with written permission of dept. Prereq: 153 or equiv with written permission of dept. Not open to students with credit for 471, 576, 568 or 569.

573 Elementary Number Theory U G 5

Utilization of concrete examples to introduce concepts of modern algebra; prime numbers, congruences, Diophantine equations, elementary combinatorial analysis.

Wi Qtr. 5 cl. Prereq: 153 or permission of dept.

574 Geometry U G 5

Euclidean and non-Euclidean geometry, emphasizing algebraic connection; Affine and projective planes, duality. Topics from: geometry of groups; finite planes, Hilbert's postulates, n -dimensional spaces.

Au Qtr. 5 cl. Prereq: 571, 568 or equiv with written permission of dept.

575 Combinatorial Mathematics and Graph Theory U G 5

Some classical puzzles of recreational mathematics; matching theory, graph theory, network flows, and optimization; enumeration techniques; combinatorial designs and coding theory.

Wi, Sp Qtrs. Prereq: 568 or written permission of dept.

576 Linear Algebra and Discrete Algebraic Structures I U G 5

Linear algebra (vector spaces, linear maps, matrices, systems of equations) and introduction to discrete and finite algebraic structures with applications to computer and information science.

Au, Wi Qtrs. 5 cl. Prereq: 153 or permission of dept. Not open to students with credit for 569, 570, 571, 577.02, or 582.

577 Discrete Algebraic Structures U G 5**577.01 Linear Algebra and Discrete Algebraic Structures II**

A continuation of 576.

Wi, Sp Qtrs. 5 cl. Prereq: 576. Not open to students with credit for 569, 570, 571, 577, 577.02, or 582.

577.02 Discrete Algebraic Structures

An introduction to discrete and finite algebraic structures with applications to computer and information science.

Sp Qtr. 5 cl. Prereq: 571 or permission of dept. Not open to students with credit for 570, 576, 577.01, or 577.

580 Algebra I U G 3

The integrated algebra sequence 580, 581 and 582 includes elementary number theory, group theory, vector spaces and linear transformations, field theory.

Au Qtr. 3 cl. Prereq or concur: 568 or equiv with written permission of dept. Not open to students with credit for 573 or 570.

581 Algebra II U G 3

Continuation of 580.

Wi Qtr. 3 cl. Prereq: 580. Not open to students with credit for 570.

582 Algebra III U G 3

Continuation of 581.

Sp Qtr. 3 cl. Prereq: 581. Not open to students with credit for 570.

H590 Algebraic Structures I U G 5

Integers, congruence relations, structure preserving maps, topics from groups, rings, modules, vector spaces, fields.

Au Qtr. 5 cl. Prereq: H290 or equiv with written permission of dept. The sequence H590, H591 substitutes for the sequence 580, 581 and 582.

H591 Algebraic Structures II U G 3

A continuation of H590.

Wi Qtr. 3 cl. Prereq: H590 or equiv with written permission of dept.

H592 Algebraic Structures III U G 3

Continuation of H591; further topics in group and field theory and their interrelation; Galois theory.

Sp Qtr. 3 cl. Prereq: H591 or equiv with written permission of dept.

593 Individual Studies U G 2-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs.

601 Mathematical Methods in Science I U G 5

Real and complex vector spaces, inner product spaces, linear operators, matrices, eigenvalue problems, normal operators, real and Hermitian forms, applications to physics and engineering.

Au Qtr. 5 cl. Prereq: 15 cr hrs in math at the 400-500 level or written permission of dept. The recommended preliminary courses are 550, 551, and 552.

602 Mathematical Methods in Science II U G 5

Linear differential equations, solutions about singular points; Sturm-Liouville problems; Bessel functions, Legendre functions; Green's functions; Orthogonal expansions; Laplace's equation and boundary value problems.

Wi Qtr. 5 cl. Prereq: 601.

603 Stability Problems in Differential Equations U G 3

Existence and uniqueness of solutions; initial conditions; periodic solutions; Kryloff-Bogoljuboff method; graphical and numerical methods; applications to vibrational problems, relaxation theory, and nonlinear mechanics.

Qtr. 3 cl. Prereq: 547 or 550 or 702 or equiv with written permission of dept.

608† Advanced Geometry II U G 5

Continuation of 507; selected topics.

Sp Qtr. 5 cl. Prereq: 507 or equiv with written permission of dept.

610 Topics in Mathematics for Teachers U G 2-5

Special topics in mathematics for teachers at the secondary level.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs for each decimal subdivision with written permission of dept. Designed primarily for in-service teachers.

610.01 Geometry**610.02 Algebra****610.04 Probability**

614† Analysis for High School Teachers U G 5

Extension of the rational number concept to the real number concept, functions, limit concept, sequences, continuous functions, derivative, integral series, applications of the calculus.
Su Qtr. 5 cl.

635 Game Theory U G 3

Concept of a game, minimax theorem; linear programming.
Sp Qtr. 3 cl. Prereq: 571 or permission of dept.

645 Foundations of Higher Mathematics U G 3

Introduction to logic, set theory, and methods of proof; development of the rational and real numbers; transfinite numbers.
Su Qtr. 3 cl. Prereq: Written permission of dept.

651 Introduction to Real Analysis I U G 4

Real numbers, infinite sequences and series.
Au Qtr. 4 cl.

652 Introduction to Real Analysis II U G 4

Classes of functions, Riemann-Stieltjes integral.
Wi Qtr. 4 cl. Prereq: 651.

653 Introduction to Real Analysis III U G 4

Measurable sets and functions, elementary theory of the Lebesgue integral.
Sp Qtr. 4 cl. Prereq: 652.

654 Complex Variables U G 3

Complex arithmetic, geometry, conformal mapping, analytic functions, and residues.
Au Qtr. 3 cl. Prereq: Permission of dept.
Recommended primarily for grad students in science and engineering. Not open to students with credit for 514 or 552.

655 Elementary Topology I U G 4

Continuity, compactness, connectedness in metric and general topological spaces.
Au Qtr. 4 cl. Prereq: Written permission of dept.

656 Elementary Topology II U G 4

Continuation of 655; general topological spaces, products, quotients.
Wi Qtr. 4 cl. Prereq: 655.

657 Elementary Topology III U G 4

Continuation of 656; fundamental group and covering space.
Sp Qtr. 4 cl. Prereq: 656.

662 Calculus of Variations U G 5

Variation of a functional; Euler-Lagrange equations; Hamilton-Jacobi theory; second variation Theory of field; Noether theorem; direct methods; applications to geometry and physics.
Au Qtr. 5 cl. Prereq: 255 or 556; 551.

665 Modern Mathematical Methods in Relativity Theory I U G 4

Geometry in Minkowski space-time; physical interpretations; tensors; exterior calculus; manifolds; Lie derivatives; parallel transport; torsion; curvature; Cartan's two structural equations; Einstein Field equations.

Wi Qtr. 4 cl. Prereq: 254 and Physics 133 or equiv with written permission of dept.

666 Modern Mathematical Methods in Relativity Theory II U G 4

Fluid dynamics, Hamilton-Jacobi theory in curved geometries; geometry and dynamics of homogeneous cosmologies; black holes; local-global properties; entropy; gravitational collapse; space-time symmetries.
Sp Qtr. 4 cl. Prereq: 665 or equiv with written permission of dept.

670 Algebra I U G 4

Elementary number theory, polynomials, Euclidean domains; elementary theory of groups and fields, vector spaces and modules over a ring, linear transformations, determinants, normal form of matrices, quadratic forms.
Au Qtr. 4 cl. Prereq: Permission of dept.

671 Algebra II U G 4

Continuation of 670.
Wi Qtr. 4 cl. Prereq: 670.

672 Algebra III U G 4

Continuation of 671.
Sp Qtr. 4 cl. Prereq: 671.

674 Survey of Combinatorial Mathematics U G 3

Matching and network flows, graph theory, combinatorial designs, and enumeration theory.
Su, Sp Qtrs. 3 cl. Prereq: 569 or 571 or equiv with written permission of dept.

675 Applied Discrete Mathematics I U G 4

Graph theory, trees, cycles, coboundaries, electrical networks, networks flows, transportation problems, linear programming, integer programming; use of computer programs will be encouraged.
Au Qtr. 4 cl. Prereq: 672 or equiv with written permission of dept.

676 Applied Discrete Mathematics II U G 4

Combinatorial designs, applications in experiments, coding theory, elementary counting, Polya theory, Dimer problem, computational complexity.
Wi Qtr. 4 cl. Prereq: 675 or equiv with written permission of dept.

677 Applied Discrete Mathematics III U G 4

Topics in graph theory, designs, codes, enumeration problems, algorithms and computational complexity.
Sp Qtr. 4 cl. Prereq: 676 or equiv with written permission of dept.

680 Projective Geometry U G 4

The combinatorial and algebraic aspects of projective geometry, including non-Desarguesian and finite projective planes, coordination, the theory of collineations, incidence matrices, Latin squares.
Su, Au Qtrs. 4 cl. Prereq: 672.

693 Individual Studies U G 1-5

Individual conferences, assigned readings, and reports on minor investigations.
Su, Au, Wi, Sp Qtrs.

694 Group Studies U G 2-5

Designed to give groups of students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs.

701 Mathematical Methods in Science III U G 5

Introduction to tensor analysis with applications to geometry; elements of the calculus of variations with applications to physical problems.

Sp Qtr. 5 cl. Prereq: 571, 601, or permission of dept.

702 Integral Equations and Eigenvalue Problems I U G 3

Orthogonal functions, linear, integral equations of first and second kinds, relations to ordinary differential equations, Volterra's equation, boundary value problems, practical methods of solution.

Au Qtr. 3 cl. Prereq: 601 and 602.

703 Integral Equations and Eigenvalue Problems II U G 3

Distribution of eigenvalues, self-adjointness, definiteness, Green's functions, minimal properties, approximation of eigenvalues, eigenfunction expansions, Ritz method, iteration method, matrix eigenvalue problems, finite differences.

Wi Qtr. 3 cl. Prereq: 702.

704† Operational Calculus U G 3

Laplace transformation in real domain, applications in physics and engineering; differential equations; Laplace transformation in complex domain, application to partial differential equations; Fourier transform, applications.

Sp Qtr. 3 cl. Prereq: 601 and 602.

705† Special Functions U G 3

Power series developments, asymptotic expansion, gamma functions, cylindrical functions, spherical harmonics, orthogonal polynomials, hypergeometric functions, theta functions, elliptic functions and integrals, numerical techniques.

Wi Qtr. 3 cl. Prereq: 601 and 602.

706† Applied Complex Analysis U G 5

Basic facts of complex analysis; conformal mapping properties of elementary functions.

Schwartz-Christoffel formula; distortion theorems; uniformization; applications to electromagnetic fields, fluid dynamics, heat flow.

Sp Qtr. 5 cl. Prereq: 414, or 552 and 556. Students are urged to fulfill the prereq with 552.

707 Theoretical Numerical Analysis I U G 3

Introduction to Banach, Hilbert, Sobolev spaces; approximation, interpolation, variational methods, finite element method, matrix iterative methods, approximate solution of differential and integral equations, error estimation.

Au Qtr. Prereq: 651 and 671, or 602, or equiv, with permission of instructor.

708 Theoretical Numerical Analysis II U G 3

Continuation of 707.

Wi Qtr. Prereq: 707.

709 Theoretical Numerical Analysis III U G 3

Continuation of 708.

Sp Qtr. Prereq: 708.

710† Projective Geometry I U G 4

Desarguesian spaces; lattice-theoretic characterization; introduction of coordinates; fundamental theorem on collineations; correlations.

Au Qtr. 4 cl. Prereq: Permission of dept.

711† Projective Geometry II U G 4

Non-Desarguesian planes; collineations; coordinates; Lenz-Barlotti theorem; Bruck-Ryser theorem; existence and non-existence results; selection of related topics.

Wi Qtr. 4 cl. Prereq: 710 or permission of dept.

722 Theory of Probability I U G 4

Fundamentals of measure theory, general probability distributions, Lebesgue integral, and conditional expectations.

Au Qtr. 3 cl, 1 lab hr. Prereq: 653.

723 Theory of Probability II U G 4

Characteristic functions, limit theorems, Markov processes, and stationary processes.

Wi Qtr. 3 cl, 1 lab hr. Prereq: 722.

724 Theory of Probability III U G 4

Continuation of 723.

Sp Qtr. 3 cl, 1 lab hr. Prereq: 723.

730 Mathematical Foundations of Probability Theory U G 4

Martingales; selected topics from stochastic processes.

Au Qtr. 3 cl, 1 lab hr. Prereq: 724 or permission of dept.

737† Mathematical Information Theory I U G 3

Probabilistic coding theory and coding theorems.

Wi Qtr. 3 cl. Prereq: Either 522, 722, 830, or permission of dept.

738† Mathematical Information Theory II U G 3

Algebraic coding theory; group codes.

Sp Qtr. 3 cl. Prereq: 670, and 522 or 722 or 830.

741† Mathematical Foundations of the Design and Use of Automatic Systems I U G 3

Boolean operations; reduction of systems of Boolean functions; turing machines and general recursive functions; application to problems relating to design and use of automatic systems.

Au Qtr. 3 cl. Prereq: Grad standing or permission of dept.

742† Mathematical Foundations of the Design and Use of Automatic Systems II U G 3

Continuation of 741.

Wi Qtr. 3 cl. Prereq: 741 and grad standing or permission of dept.

743† Mathematical Foundations of the Design and Use of Automatic Systems III U G 3

Continuation of 742.

Sp Qtr. 3 cl. Prereq: 742 and grad standing or permission of dept.

749 Mathematical Logic U G 5

A study of the axiomatic method; the classical theorems of Skolem and Godel; some modern results about model classes and the theory of definability; axiomatic number-theory and set-theory.

Sp Qtr. 5 cl. Prereq: 545 or 670.

750 Real Analysis I U G 5

Relative extremes in partial orders; additive and countable additive set functions; extensions of set functions; integration, differentiation, applications. Su, Au Qtrs. 5 cl. Prereq: 653.

751 Real Analysis II U G 5

Continuation of 750.
Wi Qtr. 5 cl. Prereq: 750.

752 Real Analysis III U G 5

Continuation of 751.
Sp Qtr. 5 cl. Prereq: 751.

753 Introduction to Complex Analysis I U G 5

Families of holomorphic and meromorphic functions, geometrical methods of the theory of functions, conformal transformations; including the Cauchy integral theorem, Runge's theorem, Riemann mapping theorem.
Wi Qtr. 5 cl. Prereq: 653.

754 Introduction to Complex Analysis II U G 5

Analytic continuation, general analytic functions, algebraic, entire, elliptic, the gamma and zeta function, Dirichlet's series, Picard's theorems, Mittag-Leffler's theorem, Stirling's formula.
Sp Qtr. 5 cl. Prereq: 753.

760* Ordinary Differential Equations I U G 3

Introduction to theory of linear and non-linear ordinary differential equations; equations with singular points; stability theory, boundary value problems.
Au Qtr. 3 cl. Prereq: 571 and 653.

761† Ordinary Differential Equations II U G 3

Continuation of 760.
Wi Qtr. 3 cl. Prereq: 760.

763† Partial Differential Equations and Their Applications I U G 3

First order partial differential equations, theory of characteristics; second order partial differential equations; elliptic, parabolic, hyperbolic equations; standard method of solution, Green's function; integral equations.
Au Qtr. 3 cl. Prereq: 653.

764† Partial Differential Equations and Their Applications II U G 3

Continuation of 763.
Wi Qtr. 3 cl. Prereq: 763.

767 Introduction to the Theory of Approximation I U G 4

Approximation by polynomials and trigonometric polynomials, Chebyshev's theory of best approximation and its generalizations; interpolation processes and mechanical quadrature; orthogonal polynomials and elements of harmonic analysis.
Au Qtr. 4 cl. Prereq: 653 or equiv with written permission of dept.

768 Introduction to the Theory of Approximation II U G 4

A continuation of 767.
Wi Qtr. 4 cl. Prereq: 767 or equiv with written permission of dept.

769 Introduction to the Theory of Approximation III U G 4

A continuation of 768.
Sp Qtr. 4 cl. Prereq: 768 or equiv with written permission of dept.

770 Algebra I U G 4

Permutation groups, solvable groups, composition series, polynomial rings, unique factorization domains, canonical forms, bilinear forms, free modules, tensor products, Galois theory, algebraic closure, transcendental extensions.
Au Qtr. 4 cl. Prereq: 672 or equiv with written permission of instructor.

771† Algebra II U G 4

A continuation of 770.
Wi Qtr. 4 cl. Prereq: 770 or equiv with written permission of dept.

772† Algebra III U G 4

A continuation of 771.
Sp Qtr. 4 cl. Prereq: 771 or equiv with written permission of dept.

775 Combinatorics and Graph Theory I U G 5

Transversal theory, network flows, matroids, linear programming, Ramsey theory.
Au Qtr. Prereq: 672.

776 Combinatorics and Graph Theory II U G 5

Combinatorial designs and geometries, difference sets, orthogonal latin squares, coding theory, enumeration theory including Mobius inversion, Polya theory, and generating functions.
Wi Qtr. Prereq: 775.

777 Combinatorics and Graph Theory III U G 5

Planar graphs and embeddings in surfaces, graph connectivity, algebraic graph theory.
Sp Qtr. Prereq: 776.

779† Experimental Number Theory U G 2-5

Topics from elementary and/or algebraic number theory; number theoretical explorations utilizing high-speed digital computers.
Au, Wi, Sp Qtrs. 3 cl, 2 labs. prereq: Permission of dept.

780 Number Theory I U G 5

Diophantine equations, congruences, p-adic numbers, algebraic number theory, class numbers, distribution of primes, continued fractions.
Au Qtr. 3 lecs, 2 seminars. Prereq: 672.

781 Number Theory II U G 5

Continuation of 780.
Wi Qtr. 3 lecs, 2 seminars. Prereq: 780.

782 Number Theory III U G 5

Continuation of 781.
Sp Qtr. 3 lecs, 2 seminars. Prereq: 781.

830 Advanced Probability I G 3-5

Selected topics from foundations, martingales stochastic processes.
Au Qtr. Prereq: 751 and permission of dept.

831 Advanced Probability II G 3-5

Continuation of 830.

Wi Qtr. Prereq: 830.

832 Advanced Probability III G 3-5

Continuation of 831.

Sp Qtr. Prereq: 831.

846 Topics in Discrete Mathematics G 2-5

Wi Qtr. 2-5 cl. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs.

847 Set Theory G 4

Axiomatic Set Theory; ordinal numbers and transfinite functions; polynomial representation; cardinal numbers; consequences of continuum hypothesis.

Au Qtr. 4 cl. Prereq: 750 or 770 or equiv with written permission of dept.

851 Differential Geometry I G 3

Curves, surfaces, fundamental forms, tensors, and connections.

Au Qtr. 3 cl. Prereq: 751, 756, and 771.

852 Differential Geometry II G 3

Continuation of 851.

Wi Qtr. 3 cl. Prereq: 851.

854 Differentiable Manifolds and Lie Groups I G 5

Tensors, exterior differential forms, connections; Lie Groups.

Wi Qtr. 5 cl. Prereq: 751, 756, and 771.

855 Differentiable Manifolds and Lie Groups II G 5

Continuation of 854.

Sp Qtr. 5 cl. Prereq: 854.

857 Introduction to Functional Analysis I G 3

Linear topological spaces, normed spaces, Hilbert spaces, convex sets, integration of vector-valued functions.

Au Qtr. 3 cl. Prereq: 552 and 751.

858 Introduction to Functional Analysis II G 3

Continuation of 857.

Wi Qtr. 3 cl. Prereq: 857.

859 Introduction to Functional Analysis III G 3

Banach Algebras, spectral theory, harmonic analysis, fixed-point theorems; applications to analysis.

Sp Qtr. 3 cl. Prereq: 857 and 858.

860 Algebraic Topology I G 3

Metric space topology, complexes in Euclidean spaces, singular homology theory.

Au Qtr. 3 cl. Prereq: 751, 756, and 771.

861 Algebraic Topology II G 3

Continuation of 860.

Wi Qtr. 3 cl. Prereq: 860.

862 Algebraic Topology III G 3

Continuation of 860 and 861.

Sp Qtr. 3 cl. Prereq: 861.

863†* Potential Theory I G 3

Newtonian potentials, boundary value problems;

logarithmic potential, elliptic partial differential equations.

Au Qtr. Prereq: 552 and permission of dept.

864† Potential Theory II G 3

Continuation of 863.

Wi Qtr. Prereq: 863.

865† Topics in Applied Mathematics G 2-5

Su, Au Qtrs. 2-5 cl. Prereq: Written permission of dept. Repeatable to a maximum of 20 cr hrs.

869† Mathematical Theory of Communication and Control G 2-5

Sp Qtr. 2-5 cl. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs.

870 Topics in Graph Theory G 2-5

Topics of current research interest.

Au, Wi, Sp Qtrs. Prereq: 777 and permission of dept. Repeatable to a maximum of 15 cr hrs.

872 Group Theory I G 4

Properties of groups, extensions, transfer, generators and defining relations, representation theory, permutation groups.

Au Qtr. 4 cl. Prereq: 672 or 772.

873 Group Theory II G 4

Continuation of 872.

Au Qtr. 4 cl. Prereq: 872.

874 Group Theory III G 4

Continuation of 873.

Wi Qtr. 4 cl. Prereq: 873.

875 Combinatorics Seminar G 2-5

Recent research articles in combinatorics are read and presented by the students.

Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 15 cr hrs.

876 Analytic Number Theory G 4

The distribution of prime numbers; Waring's problems, and selected topics.

Au, Wi Qtrs. 4 cl. Prereq: Written permission of dept. Repeatable to a maximum of 8 cr hrs.

877 Theory of Algebraic Numbers G 4

Ideals in algebraic number fields, unique decomposition theorem, different, discriminant, ideal classes, applications of Galois theory and analytical methods.

Au, Wi, Sp Qtrs. 4 cl. Prereq: Written permission of dept. Repeatable to a maximum of 8 cr hrs.

893 Individual Studies G 1-5

Individual assigned readings and reports on research investigations.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

894 Group Studies G 1-5

When need is sufficient, the department will offer under this number a course on some phase of mathematics not covered in its regular offerings.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 cr hrs.

931 Ergodic Theory I G 3

Measurable transformations, mixing and ergodicity, existence of invariant measures, contraction operations on function spaces, ergodic theorems.

Au Qtr. 3 cl. Prereq: 751.

932 Ergodic Theory II G 3

Continuation of 931.

Wi Qtr. 3 cl. Prereq: 931.

939 Topics in Probability Theory G 2-5

Various advanced topics in probability theory.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept.
Repeatable to a maximum of 20 cr hrs.**949 Topics in Logic G 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 20 cr hrs.

950 Topics in Real Analysis G 2-5Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept.
Repeatable to a maximum of 20 cr hrs.**951 Topics in Complex Analysis G 2-5**

Su, Au, Wi, Sp Qtrs. 2-5 cl. Prereq: 754. Repeatable to a maximum of 20 cr hrs.

953 Topics in Topology G 2-5Au, Wi, Sp Qtrs. Prereq: Permission of dept.
Repeatable to a maximum of 20 cr hrs.**957 Topics in Differential Geometry G 2-5**Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept.
Repeatable to a maximum of 20 cr hrs.**959 Measure and Integration I G 4**

Topics will be chosen from current research papers.

Au Qtr. 4 cl. Prereq: 751.

960 Measure and Integration II G 4

Continuation of 959.

Wi Qtr. 4 cl. Prereq: 959.

961 Topics in Functional Analysis G 2-5

Topics to be chosen from current research papers.

Su, Au, Wi, Sp Qtrs. 2-5 cl. Prereq: Permission of dept.
Repeatable to a maximum of 20 cr hrs.**970 Topics in Representation Theory G 2-5**

Topics in the representation theory of various algebraic structures.

Au Qtr. 2-5 cl. Prereq: Written permission of dept.
Repeatable to a maximum of 20 cr hrs.**973 Introduction to Homological Algebra G 4**

Categories, Functors (esp. tensor products, Hom, Tor, Ext), Natural transformations, homology, cohomology, derived functors.

Au Qtr. 4 cl. Prereq: 772 or equiv with written permission of dept.

974 Topics in Homological Algebra G 2-5

Topics selected from current research articles.

Wi Qtr. 2-5 cl. Prereq: 973 or written permission of dept. Repeatable to a maximum of 20 cr hrs.

975 Topics in Geometry G 2-5

Topics to be chosen from current research papers.

Su, Au, Wi, Sp Qtrs. 2-5 cl. Prereq: Permission of dept.
Repeatable to a maximum of 20 cr hrs.**976 Topics in Combinatorial Theory G 2-5**

Advanced topics in combinatorial theory.

Au, Wi, Sp Qtrs. Prereq: Written permission of dept.
Repeatable to a maximum of 20 cr hrs.**978 Theory of Rings G 2-5**

Topics selected from current research papers.

Su, Au, Wi, Sp Qtrs. 2-5 cl. Prereq: 772. Repeatable to a maximum of 20 cr hrs.

981 Topics in the Theory of Groups G 2-5Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept.
Repeatable to a maximum of 20 cr hrs.**982 Topics in Algebra G 2-5**

Topics selected from current research papers.

Su, Au, Wi, Sp Qtrs. 2-5 cl. Prereq: Permission of dept.
Repeatable to a maximum of 20 cr hrs.**983 Topics in Number Theory G 2-5**Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept.
Repeatable to a maximum of 20 cr hrs.**985 Seminar in Group Theory G 2-5**Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept.
Repeatable to a maximum of 20 cr hrs.**986 Seminar on Algebra G 2-5**Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept.
Repeatable to a maximum of 20 cr hrs.**987 Seminar on Commutative Algebra G 2-5**Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept.
Repeatable to a maximum of 20 cr hrs.**988 Seminar on Number Theory G 2-5**Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept.
Repeatable to a maximum of 20 cr hrs.**989 Seminar on Geometry of Numbers G 2-5**Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept.
Repeatable to a maximum of 20 cr hrs.**990 Seminar on Geometry G 2-5**Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept.
Repeatable to a maximum of 20 cr hrs.**995 Seminar in Ergodic Theory G 2-5**

Topics selected from current research papers.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept.
Repeatable to a maximum of 20 cr hrs.**996 Seminar in Analysis G 2-5**Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept.
Repeatable to a maximum of 20 cr hrs.**997 Seminar in Topology G 2-5**Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept.
Repeatable to a maximum of 20 cr hrs.**998 Seminar in Applied Mathematics G 2-5**Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept.
Repeatable to a maximum of 20 cr hrs.**999 Research G Arr**Research for thesis or dissertation purposes only.
Su, Au, Wi, Sp Qtrs.

Mechanical Engineering

Office: 2075 Robinson Laboratory, 206 West 18th Avenue, 422-2289

281 System Dynamics U 4

Theoretical and experimental study of the dynamics of linear, lumped-parameter models of mechanical, electrical, fluid, thermal, and mixed systems. Doebelin.

Au, Sp Qtrs. 3 cl, 1 2-hr lab. Prereq: Eng Mech 410 and Math 255 or 256; or permission of instructor.

294 Group Studies in Mechanical Engineering U 1-6

Special topics in mechanical engineering; the particular topic, credit hours, and the instructor will be announced in the quarter previous to the one in which the course is offered.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor.

308 Thermodynamics U 3

A study of engineering thermodynamics. Bridge.

Sp Qtr. 3 cl. Prereq: Math 254 and Physics 133. Not open to students majoring in mech eng.

309 Thermodynamics U 3

Study of macroscopic and microscopic thermodynamics. Zimmerman.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Math 415 and Physics 133. Not open to students majoring in mech eng.

311 Heat Transfer and Fluid Flow U 3

Study of the fundamental principles of heat transfer and fluid flow with applications to electrical machinery and apparatus. Jones.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 309. Not open to students majoring in mech eng.

350 Machine Design U 5

A study of the application of the general principles and empiricisms of mechanics of solids to the creative design of mechanical equipment. Starkey.

Sp Qtr. 5 cl. Prereq: Eng Mech 420. Not open to students majoring in mech eng.

382 Mechanical Engineering Analysis U 4

Continuation of 281 with additional analytical techniques of general usefulness in mechanical engineering. Doebelin.

Au, Wi Qtrs. 3 cl, 1 2-hr lab. Prereq: 281.

489 Professional Practice in Industry U 2

Actual employment in a co-op program job in industry and the preparation of a comprehensive report based on a pre-assigned outline. Starkey.

Su, Au, Wi, Sp Qtrs. Prereq: Admission to Co-op Program in mech eng.

501 Thermodynamics I U G 4

A study of basic engineering thermodynamics. Moran.

Au, Wi Qtrs. 4 cl. Prereq or concur: Chem 204 and Math 254.

502 Thermodynamics II U G 4

Continuation of 501. Moran.

Wi, Sp Qtrs. 4 cl. Prereq: 501; prereq or concur: Chem 205 or written permission of instructor.

503 Fluid Dynamics I U G 4

A study of the basic concepts, fundamental equations, and applications of fluid mechanics to engineering problems. Han.

Wi, Sp Qtrs. 4 cl. Prereq: 501.

504 Fluid Dynamics II U G 4

Continuation of 503. Han.

Au, Sp Qtrs. 4 cl. Prereq: 502 and 503.

510 Heat Transfer U G 4

A study of the fundamentals of conduction, convection, and thermal radiation energy transfer with engineering applications. Kulacki.

Au, Sp Qtrs. 4 cl. Prereq: 503; prereq or concur: 504. Civil En 413 only for agre eng majors.

527 Energy Conversion in Turbomachinery U G 3

Energy conversion in power-producing, -absorbing, and -transmitting turbomachinery. Veikoff.

Wi, Sp Qtrs. 3 cl. Prereq: 504; prereq or concur 510.

528 Energy Conversion in Positive Displacement Machinery U G 3

Energy conversion in power-producing, -absorbing, and -transmitting positive displacement machinery. Jones.

Au, Sp Qtrs. 3 cl. Prereq: 504; prereq or concur 510.

553 Kinematics and Dynamics of Machinery U G 5

Motion and force analysis in mechanisms such as plane linkages, cams, and gears; introduction to the synthesis of plane linkages and simple cam systems. Sutherland.

Au, Wi Qtrs. 5 cl. Prereq or concur: 281.

560 Principles of Mechanical Design U G 3

An introduction to the principles of mechanical design, with emphasis on the selection of mechanisms, manufacturing processes, engineering materials, and factor of safety. Guenther.

Au, Wi Qtrs. 3 cl. Prereq: Ind Eng 311 and Eng Mech 420.

561 Principles of Mechanical Design U G 3

A study of the application of the general principles and empiricisms of mechanics of solids to the creative design of mechanical equipment. Starkey.

Wi, Sp Qtrs. 3 cl. Prereq: 553 and 560.

562 Principles of Mechanical Design U G 4

Continuation of 561. Starkey.

Au, Sp Qtrs. 4 cl. Prereq: 561 or 661.

563 Principles of Mechanical Design U G 4

Continuation of 561. Starkey.

Au, Wi Qtrs. 4 cl. Prereq: 561 or 661.

564 Mechanical Engineering Design I U G 3

The methodology of intermediate design and practice in the design of a specific system which may utilize principles of any mechanical engineering discipline. Foster.

Au, Wi, Sp Qtrs. 3 2-hr lab. Prereq: 561 and 562.

Offered in cooperation with Nuclr En.

570 Mechanical Engineering Measurements U G 3

A theoretical and experimental study of the principles of operation and performance characteristics of measuring instruments used in mechanical engineering. Doebelin.

Au, Wi Qtrs. 1 cl, 1 4-hr lab. Prereq: 382, 503, and Eng Mech 420.

571 Principles of Automatic Control U G 4

A theoretical and experimental study of the principles of operation of feedback control systems, including servomechanisms and process control. Doebelin.

Wi, Sp Qtrs. 3 cl, 1 2-hr lab. Prereq: 382 or permission of instructor.

581 Mechanical Engineering Laboratory U G 3

The study and application of methods of experimental analysis. Velkoff.

Au, Wi, Sp Qtrs. 2 2-hr lab and 5 hrs lab planning and report writing. Prereq: 510 and 570; prereq or concur 563. Offered in cooperation with Nuclr En.

593 Individual Studies in Mechanical Engineering U G 1-5

Provides the opportunity to pursue special studies in mechanical engineering not otherwise covered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

612 Principles of Heat Exchangers U G 3

A study of principles of heat and mass transfer as applied to the design of heat exchangers. Han.

Au Qtr. 3 cl. Prereq: 510.

613* Cryogenic Systems U G 3

Study of low-temperature processes and equipment; physical properties at low temperatures; practical application of low-temperature techniques and processes in engineering systems. Kulacki.

Sp Qtr. 3 cl. Prereq: 311, 503, and 510.

614* Solar Energy Thermal Systems U G 3

A study of the fundamentals of solar radiation and selected topics in heat transfer with application to solar collectors and solar thermal systems. Sepsy.

Sp Qtr. 3 cl. Prereq: 510 or equiv with written permission of instructor.

625 Vapor Power Cycles U G 3

A descriptive and analytical study of elementary and advanced power plant cycles. Razgaitis.

Wi Qtr. 3 cl. Prereq or concur: 510.

630 Internal Combustion Engines U G 3

A study of combustion chambers, valve mechanisms, and the dynamic balance of internal combustion engines. Engelman.

Au Qtr. 3 cl. Prereq or concur: 526 or permission of instructor.

631 Internal Combustion Engines U G 3

Force analysis as related to the design of engine components such as pistons, bearings, valve springs, and crankshafts. Engelman.

Wi Qtr. 3 cl. Prereq or concur: 526 or permission of instructor.

632 Diesel Engines U G 3

An advanced study of Diesel engine operation, and economics. Engelman.

Sp Qtr. 3 cl. Prereq or concur: 526 or permission of instructor.

634 Gas Turbine Power Plants U G 3

A study of the principles, performance, and design of gas turbine power plants. Velkoff.

Wi Qtr. 3 cl. Prereq or concur: 527 or permission of instructor.

636 Nuclear Power Plants U G 3

A study of the thermal and mechanical design aspects of nuclear power plants and processes. Razgaitis.

Sp Qtr. 3 cl. Prereq: 510 or permission of instructor.

640 Principles of Environmental Control U G 3

A study of the principles of the control of environments for human occupation, occupation by other living beings, the operations of mechanical and electrical equipment, and for the storage and processing of materials. Sepsy.

Au, Sp Qtrs. 3 cl. Prereq: 502.

641 Heating, Ventilating, and Air Conditioning U G 4

A study of practices, components, and systems for conventional and unique air conditioning equipment used to control the environment for human occupancy, storage, and industrial processes. Sepsy.

Au Qtr. 4 cl. Prereq: 510.

642 Refrigeration and Air Conditioning U G 3

A study of fundamentals, processes, and equipment associated with refrigeration systems using vapor compression, air cycle, absorption, magnetic, and thermo-electric cooling. Sepsy.

Wi Qtr. 3 cl. Prereq: 502.

650 Machinery Dynamics U G 4

A study of the interrelationships among forces, motions, and masses as related to rigid or elastic machine members, including force analysis, vibration, impact, and balancing. Faulkner.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 553 and Math 255; or permission of instructor.

664 Mechanical Engineering Design II U G 3

Methodology and practice in computer-aided design of components and systems utilizing principles of several mechanical engineering disciplines. Foster.

Wi Qtr. 3 cl. Prereq: 561, Math 255 or 256, and En Graph 200.

665 Lubrication and Bearing Design U G 3

Analysis and design of hydrodynamic and hydrostatic bearings using liquid or gas lubricants. Foster.

Au Qtr. 3 cl. Prereq: 503 and Math 255 or 256; or permission of instructor.

666 Acoustic Problems in Engineering U G 3

A study of the fundamentals of acoustics and noise control including design criteria based on hearing damage and other human responses to sound. Faulkner.

Wi Qtr. 3 cl. Prereq: 3rd yr standing in science or engineering and written permission of instructor.

671 Measurement System Application and Design U G 4

A theoretical and experimental study of measurement instrumentation; emphasis on both principles of operation and analysis and design techniques for measurement systems of a mechanical and electromechanical nature. Doebelin.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 570 or permission of instructor.

672 Control Systems Design U G 4

A study of the theoretical and experimental procedures involved in the design of feedback control systems including servomechanisms and process control. Doebelin.

Sp Qtr. 3 cl. 1 2-hr lab. Prereq: 571 or permission of instructor.

682 Mechanical Engineering Laboratory U G 3

Continuation of 581. Velkoff.

Sp Qtr. 2 2-hr lab and 5 hrs lab planning and report writing. Prereq: 581.

687 Introduction to Design in Biomedical Engineering U G 3

Introduction of engineering students to design problems in biomedical engineering; analysis in biomechanics, bio-fluid mechanics, diffusion, and elementary physiology. Bridge.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

693 Individual Studies in Mechanical Engineering U G 2-10

Designed to give the advanced student opportunity to pursue special studies not otherwise offered; work undertaken will be selected from automotive and internal combustion machinery, combustion and fuels, heat transfer, heating, ventilating, air conditioning, industrial hydraulics, machine design, refrigeration, steam power plants, and thermodynamics.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs with a maximum of 10 cr hrs in any one topic.

694 Group Studies in Mechanical Engineering U G 1-6

Special topics in mechanical engineering. The particular topic, credit hours, and the instructor will be announced in the quarter previous to the one in which the course is offered.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs.

700 Transport Processes U G 3

A parallel, systematic study of the three transport processes of mass, momentum, and energy from the continuum viewpoint. Moran.

Su, Au Qtrs. 3 cl. Prereq: 510 and Math 255; or equiv.

714 Environmental Pollution Abatement U G 5

Problems, philosophies, principles, and methods of pollution abatement in the total environment; quantitative approaches to waste management in air, water, and land systems.

Wi Qtr. 5 cl. Prereq: Sr or grad majors in engineering or sciences. Not open to students with credit for Agri Eng 714, Civil En 518 or 714, Chem Eng 714, or Metal En 714. Cross-listed in Agri Eng, Civil En, and Metal En.

726 Introduction to Combustion U G 3

Introduction to thermodynamics and kinetics of combustion and to the role of diffusion in combustion systems. Applications to evaporation of fuel droplets, catalytic conversion and coal combustion. Korpela.

Wi Qtr. Prereq: 504; prereq or concur 510.

751†* Kinematic Design of Mechanisms U G 3

A study of graphical, analytical, and computer techniques for determining dimensions of linkage type mechanisms to satisfy displacement, velocity, and acceleration requirements. Sutherland.

Au Qtr. 3 cl. Prereq: 553, and 350 or 561.

766 Engineering Acoustics U G 3

A course in engineering acoustics covering the phenomenon by which acoustic energy is generated and transmitted, with applications to mechanical machinery. Faulkner.

Sp Qtr. 3 cl. Prereq: 666 or permission of instructor.

801 Gas Dynamics G 3

An analytical study of one and two dimensional steady flow and one dimensional unsteady flow. Han.

Sp Qtr. 3 cl. Prereq: 504 and Math 255, or equiv.

802 Fundamentals of Thermodynamics I G 3

A study of thermodynamics fundamentals from the classical viewpoint. Moran.

Wi Qtr. 3 cl. Prereq: 502 and Math 255, or equiv.

803* Fundamentals of Thermodynamics II G 3

Introduction to the fundamentals of thermodynamics from the microscopic viewpoint. Korpela.

Sp Qtr. 3 cl. Prereq: 802.

804†* Advanced Applied Thermodynamics G 3

A study of advanced topics in thermodynamics. Moran.

Sp Qtr. 3 cl. Prereq: 802.

807 Conduction Heat Transfer G 3

A study of the general heat transfer equations and their applications to heat transfer in solids and through fluids, the use of numerical and graphical analysis will be included. Kulacki.

Wi Qtr. 3 cl. Prereq: 510; and 881 or Math 512 or 557.

809†* Thermal Radiation Heat Transfer G 3

Black body radiation, gray body approximation, radiation surface properties, radiation exchange in non-participating media, conduction-radiation interaction, convection-radiation interaction and introduction to radiation in participating media. Kulacki.

Au Qtr. 3 cl. Prereq: 700, 807, 811 or equiv with written permission of instructor.

810 Dynamic in Inviscid Fluids G 3

Three-dimensional, compressible, and incompressible inviscid flows, including irrotational and rotational motion with and without flow discontinuities. Velkoff.

Au Qtr. 3 cl. Prereq: 503, prereq. or concur 881 or Math 512 or equiv.

811 Laminar Flow and Heat Transfer G 5

Laminar boundary layers and fluid flow with and without heat transfer, fully established entrance flows, free convection, and extensions to compressible flows. Han.

Wi Qtr. 5 cl. Prereq: 510 and 810.

812 Turbulent Flow and Heat Transfer G 5

Turbulent boundary layers and flows with and without heat transfer for internal and external flows including laminar instability, Reynolds stresses, and mixing length theory. Bridge.

Sp Qtr. 5 cl. Prereq: 811.

820* Internal Combustion Power Plants G 3

An advanced study of reciprocating internal combustion power plants. Engelman.

Wi Qtr. 3 cl. Prereq: 528 or equiv.

821* Advanced Principles of Energy Conversion in Turbomachinery G 3

An advanced study of power-absorbing, generating, and transmitting turbomachinery. Velkoff.
Sp Qtr. 3 cl. Prereq: 527 or equiv.

822 Preliminary Design of Power Systems G 1-18

Preliminary design and evaluation of novel systems including analysis, synthesis, and possible experimental verification. Jones.

Au, Wi, Sp Qtrs. Conf. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

823* Advanced Steam Power Cycle and Turbine Analysis G 3

An advanced study of steam power cycles and design of steam turbine nozzles and blading. Razgaitis.
Wi Qtr. 3 cl. Prereq: 503, 510, and 527.

824†* Advanced Combined Vapor Power Cycle Analysis G 3

A study of conventional and novel binary vapor cycles and combined vapor-gas power cycles. Razgaitis.
Sp Qtr. 3 cl. Prereq: 823 or permission of instructor.

825 Advanced Vapor Power Cycles and Component Studies G 1-18

Courses to be conducted on a conference basis with problems assigned to each student based on his needs and area of interest. Razgaitis.

Au, Wi, Sp Qtrs. Prereq: 823 or 824, or permission of instructor. Repeatable to a maximum of 18 cr hrs.

826 Combustion G 3

A study of chemical thermodynamics and kinetics, the basic equations of change, and application of fundamentals to combustion in engineering systems. Korpela.

Sp Qtr. 3 cl. Prereq: 700 or permission of instructor.

830* Introduction of Electro and Magneto Fluid Mechanics G 3

A study of the interactions of electric and magnetic fields with liquids and gases. Velkoff.

Wi Qtr. 3 cl. Prereq: 510 and Math 513, or permission of instructor.

840 Advanced Environmental Control Refrigeration G 3

Advanced study of conventional and novel processes including thermoelectric, magnetic, and gas systems. Sepsy.

Wi Qtr. 3 cl. Prereq: 641 or equiv.

841 Advanced Environmental Control G 3

An advanced study of conventional and unique systems used to control the environment for occupancy by people, equipment, and material. Sepsy.

Sp Qtr. 3 cl. Prereq: 640 or equiv.

842 Advanced Environmental Control Problems G 1-18

A study of methods of synthesis and analysis pertaining to the creative design of environmental control systems, involving conferences and theoretical and/or experimental investigations. Sepsy.

Au, Wi, Sp Qtrs. Conf. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

850 Dynamics of High Speed Machinery G 3

An advanced study of the interrelationships among forces, motions, and masses as related to rigid or elastic machine members. Faulkner.

Wi Qtr. 3 cl. Prereq: 650 and 880; or equiv.

860 Advanced Mechanical Design G 3

A study of concepts, principles, and phenomenological theories related to the failure-prevention aspect of mechanical design. Collins.

Au Qtr. 3 cl. Prereq: 561 and Math 255 or equiv.

861 Stress Analysis of Machinery G 3

A study of concepts, principles, and procedures related to the analysis of stresses and strains in machine parts. Starkey.

Sp Qtr. 3 cl. Prereq: 350, 562, and 563; 881 or Math 512 or equiv.

870 Modeling of Dynamic Systems G 4

A study of theoretical, experimental, and computer methods for characterizing the dynamic behavior of complex systems. Doebelin.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 880 or permission of instructor.

880 Lumped Parameter System Analysis G 3

Lumped parameter system analysis of mechanical, thermal, hydraulic, pneumatic, and electromechanical systems; system response to periodic, transient, and random excitation; computer and physical system demonstrations. Doebelin.

Au Qtr. 3 cl. Prereq: Math 225 or 256 or equiv; or permission of instructor.

881 Distributed Parameter Systems G 3

Numerical and analytical methods for obtaining solutions to engineering problems in heat transfer, fluids mechanics, and other field problems. Bridge.

Au Qtr. 3 cl. Prereq: 510 and Math 255, or equiv with written permission of instructor.

888 Mechanical Engineering Seminar G 1

Lecture and discussion of current topics related to mechanical engineering presented by graduate students, staff, and guest speakers.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Mech eng grad standing. Repeatable to a maximum of 3 cr hrs for MS degree and 3 additional cr hrs for PhD degree.

894 Group Studies in Mechanical Engineering G 1-6

Special topics in mechanical engineering. The particular topic, credit hours, and the instructor will be announced in the quarter previous to the one in which the course is offered.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs.

993 Advanced Problems in Mechanical Engineering G 1-5

Provides the opportunity to pursue special problems in mechanical engineering not otherwise covered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

999 Research in Mechanical Engineering G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Medical Communications

School of Allied Medical Professions

Office: 243 School of Allied Medical Professions Building, 1583 Perry Street, 422-1044

400 Introduction to Medical Communications U 4

Application of communication theory to the health care system and the role of the Medical Communications specialist; survey of communication related areas of the health care system. Hawes. Au Qtr. 4 cl. Prereq: Admission to the Medical Communications Division or permission of the instructor.

520 Instructional Product Design in Biomedical Communications U 5

Design and development of instructional products and materials for health related fields. Includes production of student made materials and critical analysis of existing materials. Rothenberg. 3 cl, 1 2-hr lab. Prereq: Admission to the Medical Communications Division or written permission of instructor.

525 Advanced Production Techniques in Biomedical Communications U 5

Advanced study of television and related media production including the development and maintenance of production facilities in biomedical settings. Potts. 3 cl, 1 2-hr lab. Prereq: Photog 574, Communic 510 or written permission of instructor.

595 Seminars in Biomedical Communications U 1-3

Selected studies of theory and practice in biomedical communication with emphasis on the process of development, instruction, evaluation, and change of systems, their objectives and products. Burke and staff. Wi, Sp Qtrs. 1 3-hr cl. Prereq: 400 and sr standing, or permission of instructor. Repeatable to a maximum of 9 cr hrs.

650 Advanced Field Studies in Medical Communications I U 8

Study and application of educational uses of communication processes and media in a health setting. Hawes and staff. Wi Qtr. 1 2-hr cl, 18 hrs arr. Prereq: Sr standing in med comm and written permission of instructor. Not open to students with credit for 550.

660 Advanced Field Studies in Medical Communications II U 8

Diagnosis and planning for communication services in various health environments. Burke and staff. Sp Qtr. 1 2-hr cl, 18 hrs arr. Prereq: 650. Not open to students with credit for 560.

Medical Dietetics

School of Allied Medical Professions

Office: 516 School of Allied Medical Professions Building, 1583 Perry Street, 422-0635

201 Introduction to Medical Dietetics U 1

Basic knowledge and experience in functional and sociological aspects of responsibilities of the medical dietitian. Johnson and staff. Sp Qtr. 2 cl.

410 Introduction to Patient Dietary Care U 6

Principles and practice in the dietary care of the hospital patient. Breese and staff. Au Qtr. 4 cl, 6-hr clinical study. Prereq: Humn Ntr 310.

411 Electronic Data Processing in Dietetics U 1

Introduction to basic computer concepts and the application of these concepts to dietetic systems. Au Qtr. 1 cl, clinical experience. Prereq: Enrollment in med diet or permission of instructor.

420 Management in Medical Dietetics U 3

Application of management process to nutritional care of clients in either the preventive or crisis health care setting. Au Qtr. 2 cl, 3-hr lab. Prereq: Humn Ntr 314; concur Alli Med 630.

421 Management in Medical Dietetics U 3

Continuation of 420. Au Qtr. 2 cl, 3-hr lab. Prereq: 420 and Alli Med 630.

422 Management in Medical Dietetics U 3

Continuation of 421. Sp Qtr. 2 cl, 3-hr lab. Prereq: 421.

521 Nutrition and Human Metabolism U 6

Metabolism of essential nutrients at cellular and intact levels of the body; causes, results, and dietary management of alterations in metabolism of these nutrients. Breese and staff. Wi Qtr. 4 cl, 5-hr clinical study. Prereq: Humn Ntr 310, Physchem 312 or concur, Physiol 312 or equiv; jr standing or permission of instructor.

522 Nutrition and Human Metabolism U 6

A continuation of 521. Breese and staff. Sp Qtr. 4 cl, 5-hr clinical study.

523 Nutrition and Human Metabolism U 6

Continuation of 522. Breese and staff. Su Qtr. 4 cl, 5-hr clinical study. Prereq: 522.

636 Client Managed Health Care U 1

Educational principles and practices as applied to the teaching responsibilities of the dietitian. Johnson. Au, Wi, Sp Qtrs. 1 cl, 3-hr clinical study. Prereq: Med diet jr standing. Repeatable to a maximum of 3 cr hrs.

637 Community Nutrition U 5

Public health nutrition programs and their services to the community, with particular reference to nutrition problems of special groups of the population. Roberson. Au, Wi Qtrs. 2 cl, 6-hr clinical study. Prereq: sr standing or permission of instructor.

638 Pediatric Nutrition U G 5

The nutrition of children; the influence of physical, psychological, and social growth and development from infancy through adolescence. Anderson and Pediatric Staff.

Au, Wi Qtrs. 3 cl, 4-hr clinical study. Prereq: Grad or sr standing in med diet and permission of instructor.

645 Advanced Medical Dietetics I U 10

Advanced study and evaluation of disturbed metabolic processes affecting human nutrition and solution of the complex dietetic problems accompanying them. Gallagher and staff.

Au, Wi Qtrs. 4 cl, 2-hr conf, 20-hr clinical study. Prereq: Sr standing and permission of instructor.

646 Advanced Medical Dietetics II U G 10

Continuation of 645. Gallagher and staff.

Sp Qtr. 4 cl, 2-hr conf, 20-hr clinical study. Prereq: 645, sr or grad standing and permission of instructor.

693 Individual Studies in Nutrition or Dietetics U G 1-5

Problems in various phases of nutrition or medical dietetics not included in current course offerings. Johnson and staff.

Su, Au, Wi, Sp Qtrs. Prereq: Grad or sr standing in med diet and permission of instructor.

830* World Nutrition G 3

A multidisciplinary approach to the study of nutrition in developing countries; emphasis on food supply, nutritional status, infant and child malnutrition and nutrition survey methods.

Su Qtr. 2 1½-hr cl. Prereq: Permission of instructor. Not open to students with credit for Prev Med 830.

856 Nutrition in Systemic Disease G 3

The physio-pathological background of systemic disease and the rationale of specific diets in their prevention and treatment. Bonner and medical staff.

Su Qtr. 2 1½-hr cl. Prereq: Permission of instructor. Not open to students with credit for Prev Med 856.

858* Community Nutrition G 3

Methods of discovering problems in public health nutrition and practical application of nutrition information for improvement of nutritional status at various age levels. Anderson.

Sp Qtr. 2 1½-hr cl. Prereq: 638 and 856, or permission of instructor. Not open to students with credit for Prev Med 858.

898 Interdepartmental Seminar in Nutrition and Food Technology G 1

See Interdepartmental Seminars.

Medical Illustration

School of Allied Medical Professions

Office: 206 School of Allied Medical Professions Building, 1583 Perry Street, 422-5517

100 Medical Illustration Field Experience U 0

Practical application of medical illustration techniques in a functioning hospital department of medical illustration.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

635 Biophotographic Illustration U 3

Photography as related to medicine for the medical illustrator including macro and gross specimens, clinical, biomedical, graphic, and reproduction. Keating.

Su, Au, Wi, Sp Qtrs. 1 cl, 2 2-hr lab. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

640 Techniques U 5

Advanced study for students in medical illustration including preparation of charts, graphs, medical and surgical illustrations, exhibits and general work for a medical center.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 45 cr hrs.

693 Individual Studies U 1-5

Advanced study in scientific illustration as related to medicine.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 45 cr hrs.

Medical Microbiology

Office: 5072 Graves Hall, 333 West 10th Avenue, 422-5525

624 Medical Microbiology P G 3

Morphologic, physiologic, and serologic characteristics of pathogenic microorganisms; the epidemiology and pathogenesis of infectious diseases; methods of diagnosis, prevention, and treatment. Bowman, Hamparian, Hughes, Kapral, Lang, Pollack.

Au Qtr. 3 2-hr lab. Prereq: Permission of instructor.

625 Medical Microbiology P G 4

Continuation of 624.

Wi Qtr. 40-hr lec during 7 wks. Prereq: 624.

626 Medical Microbiology P G 5

A more extensive and intensive application of basic principles of medical microbiology to infectious diseases.

Sp Qtr. 20-hr lec, 70-hr discussion and lab during 5 wks. Prereq: 625 or permission of instructor.

701 Fundamentals of Medical Immunology P G 3

Fundamentals of immunologic phenomena in the normal and diseased state, with primary emphasis on application of immunology in medicine. Lang.

Au Qtr. 3 cl.

744†* Clinical Medical Mycology U P G 4

An advanced course in medical mycology with emphasis on isolation of human pathogenic fungi from patients; comprehensive laboratory diagnosis; serology; microscopic pathology; staining; and animal applications. Pollack.

Sp Qtr. 2 cl, 2 2-hr lab. Prereq: 624, 625, and permission of instructor; Botany 662.01 recommended.

745* Immunology and Serology of the Human Mycoses U P G 3

Particular immunologic problems associated with or resulting from human mycoses; and the serologic diagnosis of fungus disease. Pollack.

Au Qtr. 1 cl, 2.3-hr lab. Prereq: 625, 262, or equiv, 744 or Botany 662.01 and permission of instructor.

754 Medical Virology P G 5

Primary emphasis on viruses important to man; fundamental properties of viruses, host cell-virus interaction, pathogenesis, and immunity. Hamparian, Hughes.

Sp Qtr. 3 1-hr lec. Prereq: 625: Biochem 613 or 709 and 623 or 710, or Physchem 611 and 612, or written permission of instructor.

757 Diagnostic and Clinical Virology P G 5

Laboratory procedures used for the diagnosis of human viral infections.

Au Qtr. 1 cl, 3.3-hr lab. Prereq: Enrollment in College of Medicine or written permission of instructor.

764 Bacteriophagy P G 4

Various phage-bacterium systems used to study and to exemplify basic mechanisms involved in virus infections. Bowman.

Sp Qtr. 2 1-hr lec, 2.2-hr lab. Prereq: 625 or permission of instructor.

793 Individual Studies in Medical Microbiology

Prereq: Enrollment in College of Medicine or permission of instructor. When registration is for 3 professional cr hrs, an additional 3 hr professional course must be taken.

793.02 Problems in Virology P 3, 6, 12, 18 G 3-15

Su, Au, Wi, Sp Qtrs. 3 months. Must repeat to 18 cr hrs for professional credit.

793.03 Problems in Experimental Bacterial Viruses P 3, 6, 12, 18 G 3-15

1, 2, 3, or 4 months (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Repeatable to a maximum of 24 cr hrs for professional credit.

793.04 Problems in Mycoplasma Research P 3, 6, 12, 18 G 3-15

3 or 4 months (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Must repeat to 18 or 24 cr hrs for professional credit.

793.05 Medical Immunology P 3, 6, 12, 18 G 3-15

1, 2, 3, or 4 months; offered all months (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Repeatable to a maximum of 24 cr hrs for professional credit.

793.06 Problems in Medical Microbiology P 3, 6, 12, 18 G 3-15

1, 2, 3, or 4 months; offered all months (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Repeatable to a maximum of 24 cr hrs for professional credit.

793.07 Diagnostic and Clinical Microbiology P G 6-18

Experience in isolation and identification of micro-organisms from clinical specimens.

1, 2, 3, or 4 months (full time) (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Prereq: 626 and permission of instructor. Repeatable to a maximum of 24 cr hrs.

793.08 Problems in Medical Mycology P G 3-18

Offers an opportunity for independent and individual tutorial training in selected areas of medical mycology. Pollack.

3 or 4 months (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Prereq: 744 and permission of instructor. Must repeat to 18 cr hrs for professional credit.

Clinical Microbiology

See Path 793.07.

Infectious Diseases

See Ped 793.03.

794 Group Studies P G Arr

One month, offered all months (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Prereq: 624 and 625, or equiv; written permission of instructor. When registration is for 3 professional cr hrs, an additional 3 cr hr professional course must be taken.

814 Seminar in Medical Microbiology G 1

Au, Wi, Sp Qtrs. Prereq: Med microbiol grad standing or permission of instructor. Repeatable with permission of instructor to a maximum of 9 cr hrs.

824 Medical Parasitology G 3

Discussion of structure, growth, development, epidemiology, and pathogenesis of animal parasites infectious for man, together with practical experience in identification. Kapral.

Au Qtr. 2 1-hr lec, 1 3-hr lab. Prereq: 626 and permission of instructor.

844 Mycoplasma, Rickettsiae, and Chlamydiae G 3

Mycoplasma and L-forms, members of the Bedsoniae group, Rickettsiae and Trachoma agents. Somerson and Pollack.

Au Qtr. 2 1-hr lec, 1-hr conf to be arr. Prereq: 625 or Microbiol 607.

854* Molecular Basis of Antibiotic and Chemotherapeutic Action G 4

Action of antibiotic and chemotherapeutic agents on specific sites in the metabolism and/or structures of cells stressing the comparative biochemistry of bacterial and animal cells. Ottolenghi and Azimi.

Sp Qtr. 2 1-hr lec, 2.2-hr labs. Prereq: 625; or Biochem 513 or equivalent; Microbiol 761; or permission of instructor.

864 Dynamic Aspects of Bacterial Infections G 5

An analysis of the dynamic interrelationships between the host's and parasite's inherent physiological capabilities and how these expressions (other than specific immunity) are mutually modified. Kapral and Ottolenghi.

Sp Qtr. 5 cl. Prereq: 625 or Microbiol 625 or equiv or permission of instructor.

894 Group Studies in Medical Microbiology G 2-6

Investigation of special areas of medical microbiology.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs. Not open to students with maximum allowable cr for 994.

999 Research in Medical Microbiology G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing in med micr.

Medical Record Administration

School of Allied Medical Professions

Office: 231 School of Allied Medical Professions Building, 1583 Perry Street, 422-0567

500 Medical Terminology U 4 or 5

Terminology pertaining to the diagnosis and treatment of disease, including standard abbreviations and anatomical, diagnostic, symptomatic, eponymic, laboratory, pathologic, radiologic, anesthetic, operative and drug terms. Su, Au, Wi, Sp Qtrs. 4 cl. 1 2-hr lab. Prereq: Admission to the med rec or permission of instructor.

501 Health Information Documentation, Analysis, Storage and Retrieval Systems U 5

Introduction to patient information systems; quantitative and qualitative evaluation of record format and documentation; the medical record administrator's responsibilities for design, implementation, management of systems. Pariser and staff.

Au Qtr. 4 cl, 1 3-hr lab. Prereq: Written permission of instructor.

502 Classification, Indexing, Registry Systems in Health Care U 5

Design, implementation and evaluation of disease and operation classification systems; use of manual and computerized medical information indexing and registry systems. Pariser and staff.

Wi Qtr. 4 cl, 1 3-hr lab. Prereq: 501.

503 Health Information Statistics and Research Methodology U 5

Computation, presentation and analysis of health and administrative statistics, including definitions, sources, collection and reporting systems; medical record administrator's role in research methodology. Pariser and staff.

Sp Qtr. 4 cl, 1 3-hr lab. Prereq: 502.

510 Legal, Legislative and Confidentiality Issues of Health Information Systems U 3

Evaluation of the medical record as a legal document consistent with medical and legal requirements of the health care delivery system; confidentiality and data security. Pariser and staff.

Wi Qtr. 3 cl. Prereq: 501 or written permission of instructor.

525 Organizational Analysis of Health Care Facilities U 3

Analysis of administration, governing board, medical staff; committees; licensing, accrediting and certifying agencies in relation to health care facilities and health information requirements.

Au Qtr. 3 cl. Prereq: Written permission of instructor.

526 Management of a Health Information System U 5

A systems approach to the planning, organizing, staffing, actuating and controlling of health information system.

Wi Qtr. 4 cl, 1 3-hr lab. Prereq: 525.

541 Clinical Affiliation U 3

On-site experience in various types of health care facilities, emphasis on acquiring procedural competencies; analysis of the total health information system.

Au, Wi Qtrs. 1 cl, 8 hr clinical study or 2 cl, 6 hr clinical study. Prereq: Admission to med rec and 503.

Repeatable to a maximum of 6 cr hrs.

542 Clinical Management Affiliation U 8

Application of management process in health care facilities emphasizing management of the health information system and personnel.

Sp Qtr. 2 3-day workshops; 8 32-40 hrs clinical study weeks. Prereq: 6 hrs of 541.

595 Seminar U 1-4

A discussion of current trends, topics, procedures, and constraints affecting the medical record profession. Pariser and staff.

Au, Wi, Sp Qtrs. 1-4 cl. Prereq: Admission to med rec.

Medical Technology

School of Allied Medical Professions

Office: 535 School of Allied Medical Professions Building, 1583 Perry Street, 422-7303

For related courses see Pathology.

480 Introduction to Medical Technology U 5

Introduction to the medical laboratory, its organization, functions, responsibilities, opportunities, instruments, and methods. Anderson and Manuselis.

Wi, Sp Qtrs. 3 cl, 6 lab hrs. Prereq: 15 cr hrs in biological sciences, Chem 211 and admission to med tech; or permission of instructor.

508 Medical Technology Laboratory U 3

Laboratory techniques in parasitology. Wilson.

Su Qtr. 2 cl, 1 3-hr lab. Prereq: Admission to med tech and permission of instructor.

511 Medical Technology Laboratory U 9

Laboratory techniques in hematology, coagulation, and urinalysis. Anderson.

Su Qtr. 27 lab hrs. Prereq: Admission to med tech and permission of instructor.

512 Medical Technology Laboratory U 9

Laboratory techniques in clinical bacteriology and mycology. Wilson.

Au Qtr. 27 lab hrs. Prereq: Admission to med tech and permission of instructor.

513 Medical Technology Laboratory U 9

Laboratory techniques in clinical immunology and immunohematology.

Wi Qtr. 27 lab hrs. Prereq: Admission to med tech and permission of instructor.

514 Medical Technology Laboratory U 9

Laboratory techniques in clinical chemistry. Pennline.

Sp Qtrs. 27 lab hrs. Prereq: Admission to med tech and permission of instructor.

515 Clinical Practice in Medical Technology U 10

Application of medical laboratory techniques under supervision in the clinical laboratories of University Hospital. Sutton.

Su, Au, Wi, Sp Qtrs. 5 8-hr labs. Prereq: 511, 512, 513, and 514 and permission of instructor.

Medicine

Office: N-1017 University Hospital, 410 West 10th Avenue, 422-4724

661 Principles of Medicine P 2

A survey course in medicine to dental students considering the infectious, deficiency, and systemic diseases; representative diseases are selected for detailed consideration and demonstrations.

Su Qtr. 2 cl. Prereq: Dent 3rd yr standing.

793 Individual Studies in Medicine P 6, 12, 18 G 1-5

All months, 1 or more months to be elected. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

Research on a minor problem under faculty supervision in the following specialties of medicine:

- 793.01 Allergy
- 793.02 Cardiology
- 793.03 Dermatology
- 793.04 Endocrinology
- 793.05 Gastroenterology
- 793.06 Genetics
- 793.07 Hematology
- 793.08 Infectious Diseases
- 793.09 Neurology
- 793.10 Pulmonary Diseases
- 793.11 Renal Diseases
- 793.12 Rheumatology

794 Group Studies in Medicine P 6, 12, 18

Group studies of special topics in medicine.

Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

794.01 Developmental Disabilities (Mental Retardation)

Interdisciplinary comprehensive exposure to medical, allied medical, epidemiological, psychological, social, sociological, educational, and legal aspects and problems of mental retardation with a community health orientation.

Fulltime—5 days/week.

797 Interdepartmental Seminars P G 1-5

Wi Qtr. Prereq: Written permission of instructor. Repeatable by written permission of College Secretary. See Interdepartmental Seminars.

b—The Philosophy of Clinical Practice for BioMedical Engineers

850 Seminar in Medicine G 1-3

Discussion of pertinent literature and research projects in various subspecialty areas with emphasis on basic science concepts. Warren and staff.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

- 850.01 Allergy
- 850.02 Cardiology
- 850.03 Dermatology
- 850.04 Endocrinology
- 850.05 Gastroenterology
- 850.06 General Medicine
- 850.07 Genetics
- 850.08 Hematology
- 850.09 Infectious Diseases
- 850.10 Neurology
- 850.11 Pulmonary Diseases
- 850.12 Renal Diseases
- 850.13 Rheumatology

999 Research in Medicine G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Medicine, College of

Office: 209 College of Medicine Administration Center, 370 West 9th Avenue, 422-5674

661 Phase I: Introduction to Medicine P 4 or 8

Introducing basic concepts of major disease mechanisms, with patient centered learning; study of the health care delivery systems and the resources of medical Informational Services.

Su, Au, Wi, Sp Qtrs. Prereq: Enrollment in College of Medicine. Repeatable to a maximum of 16 cr hrs. Registered medical students only.

662 Phase II: Nature of Life Processes in Medicine P 4, 8, 16 or 24

Macrostructure, microstructure, and function of the human body including biochemical reactions and normal defense mechanisms; study of human behavior, growth, and development; introduction to the tools of physical diagnosis.

Su, Au, Wi, Sp Qtrs. Concur: 661. Repeatable to a maximum of 80 cr hrs. Must repeat 40 cr hrs.

663 Phase III: The Pathophysiology and Manifestation of Disease P 4, 8, 16 or 24

Continuation of 662.

Su, Au, Wi, Sp Qtrs. Prereq: 662. Repeatable to a maximum of 144 cr hrs. Must repeat 72 cr hrs.

664 Phase IV: Clinical Medicine P 4, 8, 16 or 24

Multidisciplinary presentation of disease mechanisms and pharmacodynamics correlating structure and function with its cardinal manifestations; elective experience in basic science fields; clinical learning in outpatient setting.

Su, Au, Wi, Sp Qtrs. Prereq: 663. Repeatable to a maximum of 248 cr hrs. Must repeat 152 cr hrs.

693 Individual Studies P 4, 8, 16 or 24

Special studies in introduction to medicine; nature of life processes; the pathophysiology and manifestation of disease; and supervised individualized program.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Limited to students working toward the MD degree. Repeatable to a maximum of 96 cr hrs.

700 Interprofessional Education U P G 3

Focus on ethical issues, changing professional/consumer rights, and interprofessional cooperation.

3 cl. Repeatable to a maximum of 6 cr hrs.

700.01 Care of Patient/Client

Treatment of the whole person through the analysis of the interrelated problems of actual patients/clients.

Wi Qtr. Limited to students enrolled in Law, Medicine, Nursing, Social Work, theology (Columbus seminars), allied health, and biomedical sciences.

700.02 Changing Societal Values

Identification and clarification of values considerations as they relate to professional problems in dealing with consumer/clients/patients.

Au Qtr.

700.03 Ethical Issues

Ethical issues of concern to the professions and arising out of advanced technology: euthanasia, mind control, malpractice, social responsibility of the professions.

Sp Qtr. Limited to students enrolled in Law, Medicine, Nursing, Social Work, theology (Columbus seminars), allied health, and biomedical sciences.

797 Interdepartmental Seminar P G 1-5

See Interdepartmental Seminars.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Medieval and Renaissance Studies

Office: 322 Dulles Hall, 230 West 17th Avenue, 422-7495

210 Court of Charlemagne U 5

The Carolingian Renaissance: a unified interpretation of a crucial period in the transition of Europe from the classical age to the early Middle Ages.

Au Qtr. 3 cl, 2 hr arr.

211 From Abelard to Chaucer: Contrasts in Medieval Culture U 5

Characteristic expressions of idealism in the art, literature, and philosophy of 12th century Europe contrasted to the scepticism of the later medieval period.

Wi Qtr. 3 cl, 2 hr arr.

212 Culture of a City-State in the Renaissance U 5

Florence, 1200-1550; the study of an Italian Renaissance city-state with attention to its political, social, and economic structure; its religious, intellectual and artistic activity.

Sp Qtr. 3 cl, 2 hr arr.

213 Medieval Slavic Civilization U 5

Interpretative and analytical study of the major social, religious, ethical, and literary ideas and events of medieval Slavic civilization.

Wi Qtr. 4 cl, 1 hr arr.

214 Golden Age of Islamic Civilization U 5

The Baghdad Caliphate of Harun ar-Rashid from 786 to 861 A.D.

Sp Qtr. 4 cl, 1 hr arr.

693 Individual Studies U 1-5

Students may register for individual directed study under this number for work not normally offered in courses.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Open only to majors in medieval.

Repeatable to a maximum of 15 cr hrs.

694 Group Studies U G 2-5

Interdisciplinary group studies of selected topics in Medieval and Renaissance culture and civilization.

Su, Au, Wi, Sp Qtrs. Prereq: 10 cr hrs in medieval at the 200 level. Repeatable to a maximum of 15 cr hrs.

H783 Honors Course U 3-5

A program of study will be arranged for each student, with individual conferences, reports, and Honors thesis.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the courses in the student's major area of study and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the BA degree *with distinction* in medieval and Renaissance studies. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs.

888 Medieval and Renaissance Culture G 5

Selected topics in medieval culture and civilization, offered cooperatively by two or more departments in the Colleges of the Arts and Sciences.

Wi Qtr. 4 cl. Prereq: One or more 600-level courses or equiv in subject offered, appropriate to student's field of specialization, or permission of instructor.

Repeatable to a maximum of 15 cr hrs.

889 Medieval and Renaissance Literature G 5

Interdisciplinary seminar directed by two or more teachers from separate departments. Topic to be announced.

Sp Qtr. 4 cl. Prereq: One or more 600-level courses or equiv in subject offered, appropriate to student's field of specialization, or permission of instructor.

Repeatable to a maximum of 15 cr hrs.

Metallurgical Engineering

Office: 141A Metallurgical Engineering Building, 116 West 19th Avenue, 422-2491

201 Principles of Materials U 3

An introductory development of the chemical and physical properties of materials. St. Pierre.

Wi Qtr. 3 cl. Prereq: Math 153, Physics 133, Chem 204; or equiv.

210 Cast Metal Technology U 4

Introduction to the manufacture of engineering components by metal casting processes involving molding, gating, risering, melting, and solidification. Williams.

Au Qtr. 3 cl, 1 2-hr lab. Prereq or concur: Chem 204 or equiv with written permission of instructor. Industrial-type safety glasses must be worn in laboratory. No contact lenses permitted. Open to non-engineering students.

293 Individual Studies in Metallurgical Engineering U 2-6

Special topics in metallurgical engineering of individual interest at the undergraduate level, particularly with appeal to non-engineering students. Su, Au, Wi, Sp Qtrs. arr. Repeatable to a maximum of 6 cr hrs.

294 Group Studies in Metallurgical Engineering U 2-6

Special topics in metallurgical engineering at the undergraduate level. The particular topics, the number of credit hours, and the instructor will be announced in the quarter previous to the one in which the course will be offered.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 6 cr hrs.

300 Materials Engineering U 4

Mechanical behavior of metallic materials under various conditions of stress and environment. Study of selected alloy systems. Materials selection and failure analysis. Shewman.

Sp Qtr. 4 cl. Prereq: Chem 204.

301 Materials Engineering U 3

Mechanical behavior of metallic and polymeric materials under various conditions of stress and environment. Study of selected materials systems. Materials selection and failure analysis. Beck and Rigney.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Chem 204.

330 Thermodynamics of Materials U 4

Fundamental concepts of thermodynamics and their application to engineering materials and systems; introduction to the laws of thermodynamics, principles of chemical equilibrium and solution behavior. Rapp.

Sp Qtr. 4 cl. Prereq: Chem 205.

430 Chemical Metallurgy I U 4

Metallurgical calculations; energy and mass balances; analysis of steady and non-steady state processes; heat and mass transfer applied to metallurgical processes. Rapp.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 330 or equiv.

431 Chemical Metallurgy II U 4

Graphical representation of phase equilibria including important M-O-C and M-O-S systems; treatment of gas-solid reaction kinetics including oxidation, reduction, evaporation, retorting, etc.; electrochemical metallurgy processes. Rapp.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 430.

440 Physical Metallurgy I U 3

Crystallography; bonding; physical properties of single crystals, polycrystals; defects in crystals; diffusion. Rigney.

Sp Qtr. 3 cl.

450 Physical Metallurgy II U 3

Recovery recrystallization and grain growth; binary and ternary phase diagrams. Powell.

Au Qtr. 3 cl. Prereq: 440; concur 480a.

480 Physical Metallurgy Laboratories U 1

a—Introduction to metallography and related experimental techniques. Beck, Meyrick. Au Qtr. Prereq or concur: 450.

b—Diffusion, recrystallization, age hardening. Begley and Hirth. Wi Qtr. Prereq or concur: 550.

c—Isothermal transformation; quenching, tempering, and hardenability. Powell. Sp Qtr. Prereq or concur: 551.

d—Principles of x-ray diffraction and applications to the study of materials. Bigney. Au Qtr. Prereq or concur: 553.

1 3-hr lab. Repeatable to a maximum of 4 cr hrs.

Courses must be scheduled in the order listed. Not more than one course per quarter permitted.

489 Industrial Experience U 2

Au Qtr. 2 cr hrs for each summer's work. Repeatable to a maximum of 4 cr hrs. Register for course and submit report on experience during the autumn quarter following the summer in which industrial experience was obtained; one summer or 10 weeks of approved work in metallurgical industries. Williams.

502†* Advanced Structure of Materials U G 3

Means of obtaining and controlling microstructure; relationship of structure to properties; survey of alloy systems; environmental limitations of materials. Meyrick.

Wi Qtr. 3 cl. Prereq: 300, 301, or equiv. Not open to students majoring in metal en.

520 Chemical Metallurgy III U G 4

Structure and properties of liquid metals and alloys; thermodynamics of liquid metallic solutions; liquid metal-gas and slag reactions; solidification and zone refining. St. Pierre.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 431 or permission of instructor.

550 Physical Metallurgy III U G 3

Principles of phase transformations in the solid state. Powell.

Wi Qtr. 3 cl. Prereq: 450; concur 480b.

551 Physical Metallurgy IV U G 3

Physical metallurgy of plain-carbon and alloy steels. Hirth.

Sp Qtr. 3 cl. Prereq: 550.

553 Physical Metallurgy V U G 3

Relationships between the microstructure and the mechanical properties of metals and alloys. Begley.

Au Qtr. 3 cl. Prereq: 551.

560 Mechanical Metallurgy U G 3

Behavior of metals under simple and combined stress systems; elements of elastic theory, plastic deformation, dislocation theory, strength theories, and fracture. Spretnak.

Au Qtr. 3 cl. Prereq: Eng Mech 420.

589 Inspection Trip U 2

One week trip to visit industrial plants and laboratories; report required; maximum expense, \$90.00. Williams.

Sp Qtr. Taken between Wi and Sp Qtrs.

610 Molding Materials for Cast Metals U G 3

A study of materials used in compounding of sand mixtures and the effect of thermal shock upon the properties of molded masses. Williams.

Au Qtr. 3 cl. Prereq: 510.

611 Cast Metal Molding Methods, Gating, and Riser U G 3

The manufacture of sand molds by various methods; gating and risering—a study of fluid flow and solidification to produce sound castings. Williams.

Wi Qtr. 3 cl. Prereq: 510.

615 Mechanical Forming of Metals U G 3

Fundamentals of plastic deformation and analysis of common mechanical forming processes. Spretnak.

Wi Qtr. 3 cl. Prereq: 560 or equiv.

620 Process Metallurgy U G 3

Analysis and design of processes for extracting and refining of metals. St. Pierre.

Au Qtr. 3 cl. Prereq: 520 or equiv.

635 Corrosion U G 3

Engineering aspects of corrosion and its control. Forms by which corrosion manifests itself, simplified mechanisms, and methods for combating corrosion. Design and economics. Fontana.

Au Qtr. 2 cl, 1 2-hr lab. Prereq: Eng 4th yr standing or permission of instructor.

654* Electronic Properties of Materials U G 3

Electrical, magnetic and optical properties of materials; alloy theory. Rigney.

Wi Qtr. 3 cl. Prereq: Eng 3rd yr standing.

670 Engineering Metallurgy I U G 3

Basic properties of metals and alloys, cost structure, design factors, specifications, and statistical methods; selection of metals and alloys, service failures. Staehle.

Wi Qtr. 3 cl. Prereq: 551.

671 Engineering Metallurgy II U G 3

Continuation of 670. Spretnak.

Sp Qtr. 3 cl. Prereq: 670.

672*† Powder Metallurgy U G 3

Preparation and fabrication of metal powders. Engineering properties and industrial uses. Theory of compaction and sintering. Powell.

Sp Qtr. 3 cl. Prereq: 551 or equiv.

673 Physical Metallurgy of Nonferrous Alloys U G 3

Physical metallurgy of aluminum, magnesium, titanium and copper-base alloy systems. Powell.

Sp Qtr. 3 cl.

680 Mechanical Metallurgy Laboratory U G 1

Selected laboratory experiments on elastic properties, mechanical properties, and modeling of mechanical forming processes. Beck and Spretnak.

Wi Qtr. 1 3-hr lab. Prereq: 560 or equiv.

693 Individual Studies in Metallurgical Engineering U G 1-6

All studies (library and/or research investigations) are under the close direction of instructors;

comprehensive report and formal seminar presentation required.

a—The Properties of Metals and Alloys

b—Production and Refining of Metals

c—Metallurgical Equilibria

d—Corrosion Engineering

e—Cast Metals

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 9 cr hrs.

694 Group Studies in Metallurgical Engineering U G 2-6

Special topics in metallurgical engineering; the particular topics, the number of credit hours, and the instructor will be announced in the quarter previous to the one in which the course will be offered.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs.

695 Senior Seminar U 1

Professional aspects of metallurgical engineering. Meyrick.

Au Qtr. 1 cl. Prereq: Metal en sr standing.

710 Cast Metal Control U G 3

A study of the factors involved in the elimination of defective products. Williams.

Sp Qtr. 3 cl. Prereq: 610 or 611.

714 Environmental Pollution Abatement U G 5

Problems, philosophies, principles, and methods of pollution abatement in the total environment; quantitative approaches to waste management in air, water, and land systems.

Wi Qtr. 5 cl. Prereq: Sr or grad majors in engineering or sciences. Not open to students with credit for Agri Eng 714, Civil En 518 or 714, Chem Eng 714, or Mech Eng 714. Cross-listed in Agri Eng, Civil En, Chem Eng, and Mech Eng.

730 Thermodynamics of Alloys U G 3

Thermodynamics of liquid and solid alloy systems; numerous problems. St. Pierre.

Au Qtr. 3 cl. Prereq: 520 and 550, or equiv.

735 Advanced Corrosion U G 3

Theories and mechanisms of corrosion. Staehle.

Wi Qtr. 3 cl. Prereq: 635.

736 Behavior of Materials at Elevated Temperatures U G 3

The mechanical and chemical properties of materials at elevated temperatures; creep, superalloys, dispersion strengthening, composites, and oxidation. Rapp.

Sp Qtr. 3 cl. Prereq: 330.

740 Theory and Properties of Metals U G 3

Dependencies of physical properties on structure; regularities in the structure of alloy systems; transport phenomena in metals and alloys; magnetic phenomena. Speiser.

Au Qtr. 3 cl. Prereq: 201, 551, and Math 255; or equiv with written permission of instructor.

745 Advanced Physical Metallurgy I U G 3

Diffusion in metals. Shewman.

Au Qtr. 3 cl. Prereq: 551.

750 Advanced Physical Metallurgy II U G 3

Nucleation theory in phase transitions, formal nucleation and growth theory, recovery, recrystallization and grain growth, allotropic phase transitions, early stages of precipitation from solid solution. Meyrick.

Wi Qtr. 3 cl. Prereq: 745.

793 Individual Studies in Metallurgical Engineering U G 2-6

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs.

795 Graduate Seminar U G 1

Discussion of current thesis problems and outstanding current literature in metallurgical engineering; round table discussion of selected metallurgical topics.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 12 cr hrs.

820 Theory of Metal Refining G 3

Mechanisms of reactions in liquid alloys; applications of thermodynamics and kinetics to the analysis of metal refining. St. Pierre.

Sp Qtr. 3 cl. Prereq: 730.

831 Advanced Metallurgical Thermodynamics II G 3

Continuation of 730; thermodynamics of metallurgical systems. Speiser.

Wi Qtr. 3 cl. Prereq: 730.

832 Metallurgical Kinetics G 3

Application of rate theory to reaction steps and transport phenomena in metallurgical reactions. Rapp.

Au Qtr. 3 cl. Prereq: 730.

835†* Point Defects in Crystalline Materials G 3

A thermodynamic and electrochemical treatment of the formation, concentrations, mobilities, and interactions of atomic, ionic, and electronic point defects in materials at high temperatures. Rapp.

Wi Qtr. 3 cl. Prereq: 730 or permission of instructor.

841 Theory and Properties of Metals G 3

Continuation of 740. Speiser.

Wi Qtr. 3 cl. Prereq: 740.

842 Theory and Properties of Metals G 3

Continuation of 841. Speiser.

Sp Qtr. 3 cl. Prereq: 841.

851 Advanced Physical Metallurgy III G 3

Classification of phase transformations, continuous and discontinuous precipitation from solid solution, eutectoidal transformations, massive and martensitic transformations, order-disorder changes. Meyrick.

Sp Qtr. 3 cl. Prereq: 745 and 750.

852 Advanced Physical Metallurgy IV G 3

Relation of properties to microstructure. Hirth.

Wi Qtr. 3 cl. Prereq: 851.

855†* Structures of Metals and Alloys G 3

Application of X-ray diffraction and electron diffraction theory to the study of the structure of metals and alloys. Rigney.

Sp Qtr. 3 cl. Prereq: 480, 551, and Math 415; or permission of instructor.

860 Quantitative Dislocation Theory G 3

Mathematical treatment of dislocation theory and its application to flow and fracture phenomena in solids. Hirth.

Au Qtr. 3 cl. Prereq: Math 255 or permission of instructor.

861†* Advanced Mechanical Metallurgy G 3

Mechanics of deformable bodies, advanced topics in elasticity, tensile deformation, mechanics of fracture, plastic instability and its role in notch ductility and fracture. Spretnak.

Sp Qtr. 3 cl. Prereq: 560 or equiv.

999 Research in Metallurgy G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Microbiology

Office: 368 Biological Sciences Building, 484 West 12th Avenue, 422-2301.

301 The Biology of Pollution U 2

A general consideration of the interactions of environmental pollutants and biological systems. Dugan.

Au Qtr. 2 cl. Credit does not count toward a major in micrbiol.

509 Microbiology in Relation to Man U G 5

Designed to give the student an understanding of microorganisms which have a bearing on the physical and economic well-being of man. Ackermann, Mote, and Randles.

Su, Au, Wi, Sp Qtrs. 3 cl, 2 2-hr labs. Prereq: Biology 100 or Botany 110 or Zoology 110 or equiv; Biology 101 or Botany 111 or Zoology 111 recommended. Credit does not count toward a major in micrbiol.

592 Independent Study of Practical Microbiology U 2

Students will work with course instructor, teaching assistants and associates to examine preparation and presentation of material, and gain experience working with students and faculty.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr micrbiol major and permission of coordinating adviser.

General Prerequisites for Courses Numbered 600 and 700

Unless otherwise indicated the prerequisites for 600 and 700-level courses are 15 hours of chemistry and 10 hours of biological sciences.

601 General Microbiology U G 5

Fundamental principles of microbiology and of the characteristics of microorganisms, emphasizing their morphology, classification, visualization, isolation, cultivation and maintenance, growth and death.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 10 cr hrs in biological sciences and Chem 242, or Biochem 511, or 613. May not be taken concur with 509. Not open to students with credit for 607 or 609.

602 General Microbiology Laboratory U G 5

A laboratory course emphasizing fundamental microbiological techniques.

Au, Wi, Sp Qtrs. 2 3-hr labs, 2 cl. Prereq or concur: 601. May not be taken concur with 509. Not open to students with credit for 607 or 609.

613 Microbial Structures and Functions U G 3

The basic biological and chemical functioning of micro-organisms as an integrated activity involving their structures, their physiological activities and their environments.

Wi Qtr. 3 cl. Prereq: 602 or equiv with written permission of instructor.

622 Principles of Infection and Resistance U G 3

A study of host-parasite relationships, with emphasis on pathogenicity and immunity. Dodd.

622.01 Lecture

Wi, Sp Qtrs. 3 cl. Prereq: 602 or 607 for micrbiol majors; 509 for non-majors. Not open to students with credit for 622.

622.02 Laboratory

Wi, Sp Qtrs. 1 cl, 2 2-hr labs. Prereq or concur: 622.01.

Medical Microbiology

See Med Micr 624 and 625.

624 Microbial Parasitism U G 5

Overview of parasitic relationships with emphasis on host response as influenced by route of contact, nature of etiologic agent(s), host species, and environmental influences. Rheins.

Au, Sp Qtrs. 3 cl, 2 2-hr labs. Prereq: 622.02, or 607 and 622.

627 Microbiology for Optometry Students P 6

A specialized course in microbiology designed for professional students in Optometry which will deal with principles of infection, resistance, and related topics as they relate to the eye. Rheins.

Sp Qtr. 3 cl, 2 2-hr labs. Prereq: Enrollment in College of Optometry.

629 Pathogenic Protozoology U G 4

Pathogenic protozoa of animals are considered; emphasis on host-parasite relationships, pathogenesis of diseases, structural characteristics of parasites; lab, fresh, and preserved material. Kreier.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: Permission of instructor. Not open to students with credit for 729.

632 Cellular Aspects of the Immune Response U G 3

Cellular and molecular mechanisms of the immune response; characterization of cell products elaborated subsequent to antigenic stimulation; significance of these products in immunologic disease. Zwilling.

Au Qtr. 3 cl. Prereq: 622.02 or 622 or equiv with written permission of instructor.

634 Water Microbiology U G 5

A basic study of the relationships and influence of aquatic environments on microorganisms and the effect of microbial metabolic processes on the quality of water. Dugan.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 602 or 607.

636 Food Microbiology U G 5

The role of microorganisms in food preservation and processing with related sanitation and public health problems. Banwart.

Au, Sp Qtrs. 3 cl, 3 2-hr labs. Prereq: 509 or 602 or 607.

639†* Aquatic Microbiology U G 5

The nature and activities of bacteria in the aquatic environment, with emphasis on the different

physiological types found in the Lake Erie region. Randles.

Su (2nd term) Qtr. Given only at the Franz Theodore Stone Laboratory. 3 all-day cl per wk. Prereq: 20 cr hrs in biological sciences, including Micrbiol 607 or equiv, and Chem 243 or equiv.

640 General Cellular Biology U G 5

Introduction to cell structure and function with emphasis on integration of cytological, biochemical, genetical, and developmental perspectives. Byers, Parrish, and Sharp.

Au, Wi Qtrs. 4 cl, 1 4-hr lab. Prereq: 10 cr hrs in biological sciences and Chem 242 and 246 or equiv. Not open to students with credit for Biology 312 or 640.

642* Cell Differentiation U G 5

A study of cell differentiation including cyclic and non-cyclic change in macromolecules and organelles in cell populations. Sharp.

Sp Qtr. 3 cl, 1 1-hr rec. Prereq: 602 or 640 or equiv or permission of instructor.

644 Plant Tissue Culture Techniques in Cellular Biology U G 5

A plant-cell biology course emphasizing the principles of cellular growth and differentiation and the application of these principles in basic and applied research. Sharp.

Sp Qtr. 2 cl, 2 4-hr labs. Prereq: 602 or Botany 630 or equiv with written permission of instructor.

649 Introductory Virology U P G 5

Basic principles of virology with discussion of structures; virus-host cell interactions, detection, production and control; animal bacterial, insect and plant viruses used as examples. Wolff.

Au Qtr. 5 cl. Prereq: 509 or 602 or 607.

652 General and Pathogenic Microbiology for Dental Students P G 4

A survey of microbiology emphasizing infectious processes, basic principles, and immunology. Chorpennig and Rosen.

Wi Qtr. 3 cl, 1 1-hr lab. Prereq: Dent 2nd yr standing.

653 Oral Microbiology P G 4

A study of the oral flora and the oral diseases having a microbial etiology. Rosen.

Sp Qtr. 3 cl, 1 1-hr lab. Prereq: 652 or equiv with written permission of instructor.

Soil Microbiology

See Agronomy 660.

662 Physiology and Ecology of Aquatic Microorganisms U G 5

The nature and significance of major physiological processes in aquatic systems, with particular attention to those in planktonic and benthic microorganisms; including effects of pollutants. Randles.

Su (2nd term) Qtr. Franz Theodore Stone Lab. 3 all-day cl per wk. Prereq: Zoology 652, Chem 241, or equivs with written permission of instructor.

670 Cytologic Preparations in Electron Microscopy U G 5

Basic principles of electron microscopy, preparation, examination, and interpretation of biological specimens. Pfister.

Au, Wi Qtrs. 3 cl, 2 3-hr labs. Prereq: 10 cr hrs in biological sciences and Chem 246 or equiv and permission of instructor.

675 Microbial Development U G 5

A study of cell differentiation in bacteria, protozoans, single-celled algae, and simple fungi, with emphasis on molecular biology. Byers.

Sp Qtr. 5 cl. Prereq: 602 or 609, or 640, or Biochem 511, or equiv with written permission of instructor.

693 Individual Studies U G 1-5

Outlined by instructor to meet individual student's needs. Su, Au, Wi, Sp Qtrs. Prereq: Micrbiol 4th yr major or grad standing and permission of instructor. No more than 5 cr hrs can be counted toward an undergrad microbiol major. Not open to Plan B MS students. Repeatable only by undergrads to a maximum of 15 cr hrs. Not repeatable by grads.

694 Group Studies U G 2-5

Group work on special topics in microbial or cellular biology.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

710+ History of Microbiology U G 3

The historical development of bacteriology, immunology, and allied fields. Randles.

Wi Qtr. Lects, confs, and library work. Prereq: Micrbiol advanced undergrad majors, micrbiol grad students.

723 Immunology and Immunochemistry U G 3

A thorough treatment of the basic phenomena involving antigens and antibodies, their physico-chemical natures, and immunological reactions. Choppenning.

723.01 Lecture

Su Qtr. 3 cl. Prereq: 622.02 or equiv with written permission of instructor.

723.02 Laboratory

Su Qtr. 2 4-hr labs. Prereq or concur: 723.01.

725+* Bacterial Pathogens U G 5

Emphasis on the nature of representative bacterial disease agents. Rheins.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 624.

736 Advanced Food Microbiology U G 5

Advanced studies of the microorganisms involved in the preservation and processing of food products using rapid analytical procedures. Banwart.

Wi Qtr. 2 cl, 2 3-hr labs. Prereq: 636.

747 Molecular Genetics of Bacterial Viruses**747.01 Lecture U G 3**

A molecular biology and genetic approach to bacterial virology, emphasizing replication, gene regulation and genetics of bacteriophage.

Au Qtr. 3 cl. Prereq: 601 or Genetics 500 or equiv with written permission of instructor.

747.02 Laboratory U G 2

Genetics experiments of the classical T phages and temperate phages. Independent project isolating new mutants and mapping temperate phages.

Au Qtr. 2 3-hr labs. Prereq or concur: 747.01

749 Basic Virology U G 5

The basic physical, chemical, and biological properties of animal and bacterial viruses including intracellular replication and subcellular responses to virus infection. Wolff.

Au, Wi Qtrs. 3 cl, 2 3-hr labs. Prereq: 602 or 609 and biochem or physchem and permission of instructor.

760 Physiology of Bacteria U G 5

Nutritional requirements of bacteria, mechanisms of anaerobic dissimilation of carbon compounds, and industrial fermentation. Kolodziej and Randles.

Sp Qtr. 3 cl, 2 3-hr labs. Prereq: 602 or 609 and permission of instructor.

770 Microbial Cytology U G 5

A thorough study of morphology, fine structure and composition of microorganisms, and the relation of these to cell function. Pfister.

Sp Qtr. 3 cl, 2 3-hr labs. Prereq: 602 or 609 and permission of instructor.

777 Small Animal Preparation and Use in Biological Research U G 3

Teaching the principles of and providing practical experience in animal handling, in anesthesia and surgery of small rodents under routine laboratory conditions. Kreier.

Su Qtr. 1 4-hr lec/lab. Prereq: Advanced undergrad or grad standing in biological sciences and permission of instructor.

780 Microbial and Molecular Genetics U G 5

A thorough study of microbial genetics with emphasis on bacteria and their viruses, and on the underlying molecular mechanisms. Copeland.

Sp Qtr. 3 cl, 2 3-hr labs. Prereq: 602 or 609 and permission of instructor.

781 Special Groups of Microorganisms U G 5

A study of the morphology, physiology, and ecology of "non-typical" bacteria, actinomycetes, myxobacteriales, spirochaetes, filamentous S bacteria, and others. Frea.

Su Qtr. 3 cl, 2 3-hr labs. Prereq: 602 or 609 and permission of instructor.

H783 Honors Course U 3-5

A program of reading and research for each student with individual conferences, reports, and Honors thesis.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the courses in micrbiol and an average of B in the remainder; permission of instructor under whose supervision of work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degrees BS or BA with *distinction* in micrbiol. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs.

799 Microbiology Colloquium U G 1

Au, Wi, Sp Qtrs. 1 cl. Repeatable to a maximum of 15 cr hrs.

820+* Advanced Virology G 5

Laboratory study of viruses and some of the virus diseases of animals and man; methods of isolation, propagation, identification, diagnosis, and control are considered. Wolff.

Sp Qtr. 2 cl, 2 3-hr labs. Prereq: 749 and permission of instructor.

822+* Advanced Immunology G 3

Advanced studies of immunological phenomena, with emphasis on the physical and chemical aspects of antigens and antibodies. Dodd.

Sp Qtr. Prereq: Permission of instructor.

824 Immunohematology and Immunogenetics G 5

Advanced genetic, chemical, and immunological studies of isoantigens, including those in erythrocytes, leukocytes, platelets, body fluids, and tissues; implications in transplantation and immunological diseases. Chorprenning.
Sp Qtr. 3 cl, 2 2-hr labs. Prereq: 723.02 or 723 or equiv with written permission of instructor.

832 Advanced Cellular Immunology G 5

Studies of immunity at the cellular level with emphasis on the induction and effector roles of macrophages and lymphocytes.
Sp Qtr. 3 cl, 2 3-hr labs. Prereq: 632 or equiv with permission of instructor.

880 Seminar in Microbiology G 1-3

Su, Au, Wi, Sp Qtrs. Repeatable by permission of instructor only.

890 Interdepartmental Seminar in Developmental Biology G 2

Students will present oral reports and lead discussion on research progress in specific areas of developmental biology.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs. Given cooperatively by Botany, Genetics, Microbiology, and Zoology.

891 Interdepartmental Seminar in Environmental Biology G 2

Selected topics treating the environmental aspects of organisms, populations, and ecosystems as they may relate to time, space, and human activities.

Su, Au, Wi, Sp Qtrs. 1-2 hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs. Given cooperatively by Botany, Entomology, Microbiology, and Zoology.

893 Individual Studies G 3-5

Su, Au, Wi, Sp Qtrs. Prereq: Enrollment in Plan B master's program and written permission of instructor. Not open to Plan A MS candidates or PhD candidates. Repeatable to a maximum of 10 cr hrs. Outlined by instructor to meet individual student's needs for Plan B library research.

894 Group Studies G 2-5

Group work on special topics in microbial or cellular biology.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

896 Interdepartmental Seminar in Polar and Alpine Studies G 1-3

See Interdepartmental Seminars.

897 Interdepartmental Seminar in Natural Resources G 1

See Interdepartmental Seminars.

999 Research in Microbiology G Arr

Research for thesis or dissertation purposes only.
Su, Au, Wi, Sp Qtrs.

Military Science

Office: 253 Converse Hall, 2121 Tuttle Park Place, 422-6075

Army Reserve Office Training Corps.
Basic Military Science

111 U.S. Defense Establishment and National Security U 2

Nature of war, power, national security; proper functions of armed forces; evolution of military professionalism; missions and organization of U.S. Defense Establishment; collective security arrangements.

Au Qtr. 2 cl, 1 field trip.

112 Development of Basic Weaponry U 2

Examination and application of fundamentals of weaponry and marksmanship, including: evolution of the rifle; mechanics and functioning of standard military rifles and .22 calibre target rifle; weapons safety.

Wi Qtr. 1 2-hr cl, 1 lab.

113 Land Navigation U 2

Interpretation of topographic maps, emphasizing terrain evaluation, including: symbology, grid and polar coordinates, elevation and relief, scale and distance, azimuth, intersection, resection, and aerial photographs.

Sp Qtr. 2 1-hr cl, 1 lab.

211 History of the Military Art I U 2

Introduction to development of tactics and strategy, development of military art/science from ancient times until post-Napoleonic era; illustrated by selected campaigns and battles.

Au Qtr. 2 cl, 1 field trip.

212 History of the Military Art II U 2

Development of U.S. military professionalism; military history from 1845 to 1939 with special emphasis on organization, tactics, technology, campaigns, battles and commanders of the U.S. Army.

Wi Qtr. 2 1-hr cl, 1 lab.

213 History of the Military Art III U 2

Recent military history, strategy, and tactics, with special emphasis on developments, campaigns, battles, and commanders of U.S. Army since WWII.

Sp Qtr. 2 1-hr cl, 1 lab.

301 Military Leadership Case Studies U 3

Study of behavioral patterns and managerial methods applied to the military environment.

Au Qtr. 3 cl, 1 field trip. Prereq: Basic AROTC course or equiv.

302 Small Unit Tactics U 3

Study of rifle squad and platoon tactics to include offensive, defensive and retrograde operations; preparation of operation orders and estimates; troop leading procedures.

Wi Qtr. 3 1-hr cl, 1 hr leadership lab. Prereq: 301 or permission of professor of Mil Sc.

303 Principles of Military Teaching U 3

Study of fundamentals of instruction in the military educational environment.

Sp Qtr. 3 1-hr cl, 1 weekend field trip, 1 hr leadership lab. Prereq: 302 or permission of professor of mil sci.

401 Military Operations U 3

The study of Army organizations and operations to include managerial aspects of command and staff; emphasizes support of combat operations in various environmental situations.

Au Qtr. 3 cl, 1 field trip. Prereq: 303 or permission of professor of mil sci.

402 Logistics and Administration U 3

Study of management of resources; training, planning and management; personnel administration.

Wi Qtr. 3 1-hr cl, 1 hr leadership lab. Prereq: 401 or permission of professor of mil sci.

403 Military Justice and Preparation for Service U 3

Study of military justice, review of map reading; service orientation.

Sp Qtr. 3 1-hr cl, 1 hr leadership lab. Prereq: 402 or written permission of professor of mil sci.

Mineralogy

See courses in Geology and Mineralogy.

Music

Office: 105 Hughes Hall, 1899 College Road, 422-6571.

Preceding the class sessions of Music 221 and Music 201, placement tests will be given to determine the ability of students in these subjects. See School of Music for details of time and place.

100 Concert Attendance U 1

Au, Wi, Sp Qtrs. Attendance at 9 concerts or recitals. Prereq: Attendance at 45 concerts and recitals. Open only to music majors.

101 Applied Music for Non-Majors Group Instruction I U 2

Au, Wi, Sp Qtrs. 2 cl. Open only to non-music majors.

101.01 Piano

101.02 Voice

102 Applied Music for Non-Majors Group Instruction II U 2

Au, Wi, Sp Qtrs. 2 cl. Open only to non-music majors.

102.01 Piano

102.02 Voice

141 Introduction to Music U 5

A consideration of the materials of music and important styles, forms, and composers from the Baroque to the present. Gano.

Su, Au, Wi, Sp Qtrs. 3 cl, 2 hrs arr. Not open for credit to music majors. A musical background is not required.

142 Western Music to 1750 U 5

A survey of music from the Middle Ages through the Baroque.

Wi Qtr. 4 cl, 1 lab hr. Prereq: 141 or 270 or 271 or written permission of instructor. Not open for credit to music majors.

144 Music in the United States U 5

A history of music by American composers and of the place of music in American life from colonial times to the present.

Au Qtr. 4 cl, 1 lab hr. Prereq: 141 or permission of instructor. Not open for credit to music majors.

145 Introduction to Opera U 5

A survey of opera from its beginnings to the present.

Au Qtr. 4 cl, 1 lab hr. Prereq: 141 or permission of instructor. Not open for credit to music majors.

146 Symphonic Music U 5

A survey of the development of the symphony and other types of orchestral music.

Wi Qtr. 4 cl, 1 lab hr. Prereq: 141 or permission of instructor. Not open for credit to music majors.

147 Music of Bach and Handel U 5

A survey of the styles and works of the two best-known composers of the late Baroque period.

Wi Qtr. 4 cl, 1 lab hr. Prereq: 141 or permission of instructor. Not open for credit to music majors.

148 Music in the Classic Era U 5

A study of the development of classic styles and of the late 18th century forms represented in the works of Haydn, Mozart, and Beethoven.

Sp Qtr. 4 cl, 1 lab hr. Prereq: 141 or permission of instructor. Not open for credit to music majors.

149 Twentieth Century Music U 5

The main trends in the development of music from Debussy to the avant garde.

Sp Qtr. 4 cl, 1 lab hr. Prereq: 141 or permission of instructor. Not open for credit to music majors.

Campus Music Organizations

University campus music organizations are open to all students in the University who may receive full credit according to regulations of the college in which they are enrolled.

180 University Chorus U 1

Oratorio and large choral works are studied and performed. Casey.

Su (1st term), Au, Wi, Sp Qtrs. 3 or more hrs rehearsal each wk. Prereq: Admission by audition only.

Repeatable to a maximum of 12 cr hrs.

181 Symphonic Choir U 2

Symphonic Choir is a concert organization singing a variety of literature. Casey.

Au, Wi, Sp Qtrs. 6 or more hrs rehearsal each wk.

Prereq: Admission by audition only. Repeatable to a maximum of 24 cr hrs.

182 Women's Glee Club U 1

Study and performance of choral literature for women's voices.

Au, Wi, Sp Qtrs. 3 or more hrs rehearsal each wk.

Prereq: Auditions are held at stated periods, and vacancies in the club are filled with the best available voices. Admission by audition and permission of director. Repeatable to a maximum of 12 cr hrs. Membership in this concert group is open to all women students in the University by audition.

183 Men's Glee Club U 1

Study and performance of choral literature for men's voices.

Au, Wi, Sp Qtrs. 3 or more hrs rehearsal each wk. Prereq: Auditions are held at stated periods, and vacancies in the club are filled with the best available voices. Admission by audition and permission of director. Repeatable to a maximum of 12 cr hrs. Membership in this concert group is open to all men students in the University by audition only.

184 University Symphony Orchestra U 2

The University Orchestra is an 85-piece orchestra of full instrumentation devoted to the preparation of standard and modern literature; the group gives at least three concerts each year. Haddock.

Su (1st term), Au, Wi, Sp Qtrs. 6 or more hrs rehearsal each wk. Prereq: Admission by audition and permission of director. Repeatable to a maximum of 24 cr hrs. Membership is open to all University students by audition.

185 Chamber Orchestra U 1

A selected group giving public and broadcast performances; professional orchestral techniques are emphasized. Haddock.

Au, Wi, Sp Qtrs. 3 or more hrs rehearsal each wk. Prereq: Admission by audition. Repeatable to a maximum of 12 cr hrs.

186 University Football Marching Band U 2

The University Marching Band is a selected group of brass and percussion players which performs at football games and rallies during autumn quarter. Droste.

Au Qtr. 6 or more hrs rehearsal each wk. Prereq: Admission by audition and permission of director. Repeatable to a maximum of 10 cr hrs. No audit.

187 ROTC Band (Air-Army) U 1

Droste.

Wi, Sp Qtrs. 3 or more hrs rehearsal each wk. Prereq: Admission by audition and permission of director. Open to men and women students. Repeatable to a maximum of 10 cr hrs.

188 University Concert Band U 2

A selected group of limited membership devoted to the preparation and performance of the best band literature; gives public concerts and performs for University functions. McGinnis.

Au, Wi, Sp Qtrs. 6 or more hrs rehearsal each wk. Prereq: Admission by audition and permission of director. Repeatable to a maximum of 24 cr hrs.

189 University Buckeye Bands U 1

Provide concert band participation for students not enrolled in the University Concert Band; perform for University functions and give public concerts. Baker, Cochran and Jones.

Su (1st term), Au, Wi, Sp Qtrs. 3 or more hrs rehearsal each wk. Prereq: Admission by audition and permission of director. Repeatable to a maximum of 12 cr hrs.

190† Opera Chorus U 1

Hickfang.

Su (1st term), Au, Wi, Sp Qtrs. 2 or more hrs rehearsal each wk. Prereq: Admission by audition and permission of instructor. Not open to jrs and srs in opera program. Repeatable to a maximum of 12 cr hrs.

191 Chorale U 2

A selected group of mixed voices which performs an extensive repertoire in concerts both on and off campus. Casey.

Au, Wi, Sp Qtrs. 6 or more hrs rehearsal each wk. Prereq: Admission by audition and permission of instructor. Repeatable to a maximum of 24 cr hrs.

192 Brass Choir U 1

A selected group of brass and percussion students which gives public performances both on and off campus. Burkart.

Au, Wi, Sp Qtrs. 2 or more hrs rehearsal each wk. Prereq: Admission by audition and written permission of instructor. Repeatable to a maximum of 12 cr hrs.

195 University Percussion Ensemble U 1

A laboratory and performance musical ensemble whose literature consists of original and transcribed works for percussion instruments alone or with percussion as a dominant feature. Moore.

Au, Wi, Sp Qtrs. 2 or more hrs rehearsal each wk. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

196 Jazz Ensembles U 1

A selected group devoted to playing, arranging, and rehearsing contemporary jazz and stage band literature. Battenberg and Sullivan.

Au, Wi, Sp Qtrs. 2 or more hrs rehearsal each wk. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

197 Music Education Laboratory Ensemble U 1

Laboratory ensembles which provide performance experience on secondary instruments.

Au, Wi, Sp Qtrs. 2 or more hrs rehearsal each wk. Prereq: Permission of instructor. Repeatable to a maximum of 3 cr hrs.

198 Scarlet and Gray U 2

A select group of mixed voices devoted to performing, arranging and rehearsing light classical, popular and jazz literature choreographed for stage appearances.

Su, Au, Wi, Sp Qtrs. 6 or more hrs rehearsal each week. Prereq: Successful audition and permission of instructor. Small mixed vocal ensemble. Repeatable to a maximum of 12 cr hrs.

199 Small Ensembles U 1

Su, Au, Wi, Sp Qtrs. 2 or more hrs rehearsal each wk. Prereq: Admission by audition and permission of instructor. Each decimal subdivision repeatable to a maximum of 12 cr hrs.

- 199.01 Piano
- 199.02 Voice
- 199.03 Strings
- 199.04 Woodwinds
- 199.05 Brass
- 199.06 Organ
- 199.07 Percussion
- 199.08† Harpsichord
- 199.09 Harp
- 199.10 Miscellaneous

200 Applied Music (Secondary) U 1 or 2

Fundamental applied music instruction in areas other than a student's major or principal area.

Su, Au, Wi, Sp Qtrs. 1 ½-hr lesson, studio classes and recital attendance arr. Prereq: Music major or permission of the director of the School of Music. Repeatable to a maximum of 12 cr hrs for each decimal subdivision.

- 200.01 Piano
- 200.02 Voice
- 200.03 Strings
- 200.04 Woodwinds

- 200.05 Brass**
200.06 Organ
200.07 Percussion
200.08† Harpsichord
200.09 Harp

201 Applied Music (Principal) U 1 or 2

Instruction in applied music to develop musicianship, performance, and a wide reading knowledge of music literature.

1 1-hr lesson, studio classes and recital attendance arr. Prereq: Passing of placement test. Required of students in all music curricula, except BA, to a minimum of 6 qtr hrs. Open to other qualified students within the limits of instructional facilities by permission of director of the School of Music. Repeatable to a maximum of 10 cr hrs for each decimal subdivision.

201.01 Piano

Haddad, Zaremba, Brooks, Tetley-Kardos, and Platt. Su, Au, Wi, Sp Qtrs.

201.02 Voice

Alch, Cooper, Hickfang, Boatwright, and Muschick. Su, Au, Wi, Sp Qtrs.

201.03 Strings

Conable, Culver, Davis, Hardesty, and McClure. Su (1st term), Au, Wi, Sp Qtrs.

201.04 Woodwinds

Baker, Green, McGinnis, Titus, Smith, Mosello, and Haddock.

Su (1st term), Au, Wi, Sp Qtrs.

201.05 Brass

Battenberg, Burkart, Droste, Jones, LeBlanc, Duchi, and Hightshoe.

Su (1st term), Au, Wi, Sp Qtrs.

201.06 Organ

Held and Wilson.

Su (1st term), Au, Wi, Sp Qtrs.

201.07 Percussion

Moore.

Au, Wi, Sp Qtrs.

201.08† Harpsichord

Au, Wi, Sp Qtrs.

201.09 Harp

Harriman.

Au, Wi, Sp Qtrs.

210 Introductory Jazz Improvisation U 2

Analytical techniques for listening, melodic elaboration techniques, and techniques for creating new melodies with regard to relevant styles, phrasing, coherence, and current trends. Levey.

Au Qtr. 2 cl. Prereq: Permission of instructor.

Repeatable to a maximum of 4 cr hrs. Not open to students with maximum allowable credit for Music 511.

212 Diction for Singers I (Italian) U 2

Fundamentals of phonetics and sound production as applied to singing in Italian. Alch.

Wi Qtr. 3 cl. Prereq: Minimum of 2 cr hrs of applied study in voice or written permission of instructor.

213 Diction for Singers I (German) U 2

Fundamentals of phonetics and sound production as applied to singing in German. Cooper.

Au Qtr. 3 cl. Prereq: Minimum of 6 cr hrs of applied study in voice or written permission of instructor, and 212.

214 Diction for Singers I (French) U 2

Fundamentals of phonetics and sound production as applied to singing in French. Muschick.

Au Qtr. 3 cl. Prereq: Minimum of 6 cr hrs of applied voice or written permission of instructor, and 212.

221 Music Theory I U 3

Detailed study of basic theoretical concepts, the elements of music, and musical notation, including elementary written and keyboard harmony, melody writing, analysis, and creative work.

Au, Wi Qtrs. 3 cl. Prereq: Passing of placement tests.

222 Music Theory II U 3

Study of the principles of diatonic harmony, non-chordal tones, and secondary dominants, including two, three, and four-part writing, analysis, keyboard harmony, and creative work.

Wi, Sp Qtrs. 3 cl. Prereq: 221.

223 Music Theory III U 3

A survey of chromatic harmony, seventh and ninth chords and modulation, with continuing emphasis on written and keyboard application, analysis, and original composition.

Su, Sp Qtrs. 3 cl. Prereq: 222.

224 Sight Singing and Dictation I U 1

Singing and writing of major and minor scales, intervals, triads, tonal and rhythmic groups, tonal melodies, and canons.

Au, Wi Qtrs. 3 lab hrs.

225 Sight Singing and Dictation II U 1

Singing and writing of chromatic scales, seventh-chord outlines, tonal and rhythmic groups, more difficult tonal melodies, and two-part work.

Wi, Sp Qtrs. 3 lab hrs. Prereq: 224.

226 Sight Singing and Dictation III U 1

Singing and writing of synthetic scales, seventh and ninth chord outlines, tonal melodies and harmonic progressions with modulations, syncopated rhythmic figures, and two-part work.

Su, Sp Qtrs. 3 lab hrs. Prereq: 225.

231 Jazz Theory U 2

Jazz composer-arranger techniques applied to traditional harmony, voice leading, chord progression, counterpoint, melody and bass-line writing. Levey.

Sp Qtr. 2 cl. Prereq: 210 or 511, 222, and 225.

241 Music History I U 3

The development of music from the earliest times through the sixteenth century. Maas.

Au Qtr. 3 cl, 2 lab hrs. Prereq: 223.

242 Music History II U 3

The development of music in the 17th and 18th centuries. Maas.

Wi Qtr. 3 cl, 2 lab hrs. Prereq: 241.

243 Music History III U 3

The development of music in the 19th and 20th centuries. Maas.

Sp Qtr. 3 cl, 2 lab hrs. Prereq: 242.

244 Survey of African and African-Derived Music in the Western World U 3

An introduction to traditional African music and its role in the history and development of Afro-American music with its concomitant socio-political milieu. Barber.

Au, Sp Qtrs. 3 cl. Not open to students with credit for Black St 244. Cross-listed in Black Studies.

261 Applied Music Methods and Materials I U 1 or 2

261.01 Piano

Lowder.

Au, Wi, Sp Qtrs. 4 cl.

261.02 Voice

Swank.

Au, Wi, Sp Qtrs. 4 cl.

261.03 Strings

Culver.

Au Qtr. 4 cl.

261.04 Woodwinds

Von Gruenigen.

Au, Wi Qtrs. 4 cl.

261.05 Brass

Droste.

Wi Qtr. 4 cl.

261.07 Percussion

Moore.

Au, Wi, Sp Qtrs. 4 cl.

261.11 Basic Conducting Laboratory U 2

Basic conducting skill development emphasizing pulse, rhythm and physical coordination.

Au, Sp Qtrs. 4 cl.

262 Applied Music Methods and Materials II U 2

Prereq: 261 or equiv.

262.01 Piano

Au, Wi, Sp Qtrs. 4 cl.

262.02 Voice

Wi, Sp Qtrs. 4 cl.

262.03 Strings

Wi Qtr. 4 cl.

262.04 Woodwinds

Wi, Sp Qtrs. 4 cl.

262.05 Brass

Sp Qtr. 4 cl.

262.11 Conducting (Instrumental)

Conducting instruction applied to band, orchestra and ensemble literature and performance.

262.12 Conducting (Choral)

Conducting instruction applied to choral literature and performance problems.

Au, Wi Qtrs. 4 cl. Prereq: 261.11.

263 Applied Music Methods and Materials III U 2

Prereq: 262 or equiv.

263.01 Piano

Wi, Sp Qtrs. 4 cl.

263.02 Voice

Sp Qtr. 4 cl.

264 Applied Music Methods and Materials IV U 2

Prereq: 263 or equiv.

264.01 Piano

Au, Sp Qtrs. 4 cl.

264.02 Voice

Au Qtr. 4 cl.

265 Music for Group Recreation U 2

Preparation and participation in folk singing and dancing; experience in group leadership designed for recreation and camp leaders, social workers, teachers of music, and classroom teachers. Sexton.

Au, Sp Qtrs. 3 cl.

270 Basic Experiences in Music: Fundamentals U 3

Ear-training, music reading, creative writing, voice production, and some instrumental experience as applied to the music program in the elementary school. Sexton.

Au, Wi, Sp Qtrs. 5 cl.

271 Basic Experiences in Music: Literature and Listening U 2

The elements involved in active, intelligent listening, understanding, and appreciation of representative works of music as applied to the music program in the elementary school. Sexton.

Su, Au, Wi, Sp Qtrs. 4 cl.

290 Introduction to Music Teaching U 2

The initial course of the program leading to the Bachelor of Music Education degree; school experiences in music teaching and career guidance are provided.

Au, Wi Qtrs. 2 cl.

294 Group Studies U 1-5

Supervised group studies of special problems.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs.

312 Opera Performance U 2

Instruction and experience in preparation for opera performance, including study of operatic literature and coaching of operatic roles. Hickfang.

Au, Wi, Sp Qtrs. 4 lab hrs. Prereq: Jr or sr standing and permission of instructor. Repeatable to a maximum of 10 cr hrs.

370 Music for Elementary Teachers U 3

Music literature and teaching aids for children, including singing, rhythmic, creative, and listening experiences, and their presentation. Sexton, Bonney, and Tolbert.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 270, 271, and professional standing.

401 Applied Music (Principal) U 1 or 2

Applied music instruction required in the BME curriculum to develop musicianship, performance, and a wide reading knowledge of music literature.

1 1-hr lesson, studio classes and recital attendance arr. Prereq: 201 and permission of applied area faculty. Open to other qualified students within the limits of instructional facilities by permission of the director of the School of Music. Repeatable to a maximum of 8 cr hrs for each decimal subdivision.

401.01 Piano

Su, Au, Wi, Sp Qtrs.

401.02 Voice

Su, Au, Wi, Sp Qtrs.

401.03 Strings

Su (1st term), Au, Wi, Sp Qtrs.

401.04 Woodwinds

Su (1st term), Au, Wi, Sp Qtrs.

401.05 Brass

Su (1st term), Au, Wi, Sp Qtrs.

401.06 Organ

Su (1st term), Au, Wi, Sp Qtrs.

401.07 Percussion

Au, Wi, Sp Qtrs.

401.08† Harpsichord

401.09 Harp

Au, Wi, Sp Qtrs.

402 Applied Music (Major)

Instruction required in BM curriculum in performance to develop professional qualities of musicianship, technique, and knowledge of music literature.

1 1-hr lesson, studio classes and recital attendance arr. Prereq: 201 and written permission of applied area faculty. Repeatable to a maximum of 16 cr hrs for each decimal subdivision.

402.01 Piano U 2 or 4

Su, Au, Wi, Sp Qtrs.

402.02 Voice U 3

Su, Au, Wi, Sp Qtrs.

402.03 Strings U 2 or 4

Su (1st term), Au, Wi, Sp Qtrs.

402.04 Woodwinds U 2 or 4

Su (1st term), Au, Wi, Sp Qtrs.

402.05 Brass U 2 or 4

Su (1st term), Au, Wi, Sp Qtrs.

402.06 Organ U 2 or 4

Su (1st term), Au, Wi, Sp Qtrs.

402.07 Percussion U 2 or 4

Au, Wi, Sp Qtrs.

402.08† Harpsichord U 2 or 4**402.09 Harp U 2 or 4**

Au, Wi, Sp Qtrs.

412 Diction for Singers II (Italian) U 2

Advanced study of phonetics and sound production as applied to singing in Italian. Alch.

Wi, Sp Qtrs. 3 cl. Prereq: 212.

413 Diction for Singers II (German) U 2

Advanced study of phonetics and sound production as applied to singing in German. Cooper.

Wi Qtr. 3 cl. Prereq: 212 and 213.

414 Diction for Singers II (French) U 2

Advanced study of phonetics and sound production as applied to singing in French. Muschick.

Wi Qtr. 3 cl. Prereq: 212 and 214.

421 Music Theory IV U 3

Critical study of chromatic harmony of the 18th and 19th centuries including modulatory methods and devices; current musical practice and relationships to traditional composition.

Au Qtr. 3 cl. Prereq: 223.

422 Music Theory V U 3

Techniques of impressionism, and investigation of 20th century analytical methods for tonal music, and an introduction to twelve-tone compositional methods.

Wi Qtr. 3 cl. Prereq: 421.

423 Music Theory VI U 3

Analytical study of recent compositional techniques and devices and investigation of serial, aleatory, and electronic practices; creative work in contemporary styles.

Sp Qtr. 3 cl. Prereq: 422.

424 Ear-Training I U 2

Sight-singing, dictation, and keyboard harmony.

Au Qtr. 4 lab hrs. Prereq: 226.

425 Ear-Training II U 2

Intermediate sight-singing, dictation, and keyboard harmony.

Wi Qtr. 4 lab hrs. Prereq: 424.

426 Ear-Training III U 2

Advanced sight-singing, dictation, and keyboard harmony.

Sp Qtr. 4 lab hrs. Prereq: 425.

427 Keyboard Harmony I U 2

Systematic review and utilization of basic harmonic materials at the keyboard.

Au Qtr. 2 cl. Prereq: 261.01, 262.01, and 263.01 (6 cr hrs), 201.01 (6 cr hrs), or equiv.

428 Keyboard Harmony II U 2

An introduction to score reading at the keyboard.

Wi Qtr. 2 cl. Prereq: 427.

429 Keyboard Harmony III U 2

Score reading at the keyboard.

Sp Qtr. 2 cl. Prereq: 428.

433 Scoring for Jazz Ensembles**433.01 Large Jazz Ensembles U 3**

Practical scoring experience using the standard stage band instrumentation of reeds, brass, and rhythm section.

Au Qtr. 3 cl. Prereq: 231.

433.02 Small Jazz Ensembles U 2

Specific scoring projects dealing with voicings, colors and the dynamics of the small combo jazz ensemble. Levey.

Wi Qtr. 3 cl. Prereq: 433.01

446 Survey of Jazz Styles U 3

Stylistic variants of jazz involving technical and structural aspects so that the student may recognize, play, and score them authentically. Battenberg.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

501 Applied Music (Principal) U 1 or 2

Applied music instruction required in the BME curriculum to develop musicianship, performance, and a wide reading knowledge of music literature.

1 1-hr lesson, studio classes arr. Prereq: 401 and permission of applied area faculty. Open to other qualified students within the limits of instructional facilities by permission of the director of School of Music. Repeatable to a maximum of 8 cr hrs for each decimal subdivision.

501.01 Piano

Su, Au, Wi, Sp Qtrs.

501.02 Voice

Su, Au, Wi, Sp Qtrs.

501.03 Strings

Su (1st term), Au, Wi, Sp Qtrs.

501.04 Woodwinds

Su (1st term), Au, Wi, Sp Qtrs.

501.05 Brass

Su (1st term), Au, Wi, Sp Qtrs.

501.06 Organ

Su (1st term), Au, Wi, Sp Qtrs.

501.07 Percussion

Au, Wi, Sp Qtrs.

501.08† Harpsichord**501.09 Harp**

Au, Wi, Sp Qtrs.

502 Applied Music (Major)

Instruction required in BM curricula in performance to develop professional qualities of musicianship, technique, and knowledge of music literature; half recital required in junior year.

1 1-hr lesson, studio classes and recital attendance arr. Prereq: 402 and written permission of applied area faculty. Repeatable to a maximum of 16 cr hrs for each decimal subdivision.

502.01 Piano U 2 or 4
Su, Au, Wi, Sp Qtrs.

502.02 Voice U 3
Su, Au, Wi, Sp Qtrs.

502.03 Strings U 2 or 4
Su (1st term), Au, Wi, Sp Qtrs.
502.04 Woodwinds U 2 or 4
Su (1st term), Au, Wi, Sp Qtrs.

502.05 Brass U 2 or 4
Su (1st term), Au, Wi, Sp Qtrs.

502.06 Organ U 2 or 4
Su (1st term), Au, Wi, Sp Qtrs.

502.07 Percussion U 2 or 4
Au, Wi, Sp Qtrs.

502.08 Harpsichord U 2 or 4
Au, Wi, Sp Qtrs.

502.09 Harp U 2 or 4
Au, Wi, Sp Qtrs.

510† Advanced Jazz Improvisation U 2
Technical polish, speed, facility and aesthetic uses of improvisational materials.
Sp Qtr. 2 cl. Prereq: 210 or 511 or permission of instructor. Repeatable to a maximum of 4 cr hrs.

521 Form and Analysis U 3
Introduction to the study of the formal structure of music.
Su, Au, Sp Qtrs. 3 cl. Prereq: 423.

524 Instrumentation U 3
An elementary course in scoring for the instruments of the orchestra and the band. McClure.
Wi, Sp Qtrs. 3 cl. Prereq: 423.

531 Counterpoint U 3
A fundamental course in counterpoint including species counterpoint, double counterpoint, imitation, and two-voice canon.
Au Qtr. 3 cl. Prereq: 423.

534† Scoring for Studio Orchestra U 3
Scoring for the recording studio orchestra, which is similar to the large jazz ensemble with additional strings. Levey.
Sp Qtr. 3 cl. Prereq: 433.01.

535 Composition U 3
Creative writing in the small forms.
Wi, Sp Qtrs. 3 cl. Prereq: 423.

536† Modern Song Composition U 3
Structure, critical analysis and composition of popular and theater song scores and lyrics. Levey.
Sp Qtr. 3 cl. Prereq: 433.02.

565 Marching Band Techniques U 5
A study of the modern marching band including laboratory work in marching techniques, arranging techniques, and show planning.
Sp Qtr. 3 1½-hr cl. Not open to freshmen or students with credit for 665. Open to non-music majors with written permission of instructor.

566 Jazz Ensemble Techniques U 2
The organization and operation of the public school jazz ensemble. Battenberg.
Wi Qtr. 2 cl. Prereq: Permission of instructor.

570 General Music in Elementary Schools: Basic Teaching Practices U 3
A study of the role of the music teacher in planning musical experiences for children with emphasis on

child development and appropriate teaching practices.
Au, Wi Qtrs. 3 cl, 1 lab hr. Prereq: Enrollment in the College of Education.

571 General Music in Elementary Schools: Music Literature for Children U 3
Study and analysis of art, folk, ethnic, and popular music literature suitable for children in elementary schools.
Sp Qtrs. 3 cl, 1 lab hr. Prereq: Enrollment in the College of Education.

572 General Music in Secondary Schools: Middle and Junior High School General Music U 3
The role of music in adolescents' general education and the development of competencies essential to teaching.
Au Qtr. 3 cl, 1 lab hr. Prereq: Enrollment in the College of Education.

573 General Music in Secondary Schools: Organization and Teaching of High School Music Courses U 3
Organization and teaching of courses (a) relating music to other arts or humanities and (b) dealing with the theory, history, or appreciation of music.
Wi Qtr. 3 cl. Prereq: Enrollment in the College of Education and completion of University Basic Education Requirements in the humanities and social sciences.

574 Choral Music in the Schools: Basic Teaching Practices U 3
Factors relating to organizing and teaching choral music in elementary, middle, and junior high schools.
Au, Wi, Sp Qtrs. 2 cl, 2 lab hrs. Prereq: Enrollment in the College of Education.

575 Choral Music in Senior High Schools U 3
Rehearsal procedures, choral techniques, materials, and literature suited to various choral organizations of senior high schools.
Sp Qtr. 2 cl, 2 lab hrs. Prereq: Enrollment in the College of Education.

576 Instrumental Music in Elementary Schools U 3
The role of instrumental music instruction in public education, techniques of teaching instrumental music, study of music appropriate to musical organizations in elementary schools.
Au, Sp Qtrs. 3 cl. 1 1-hr lab. Prereq: 6 cr hrs in Music 261.03, 261.04, 261.05, or 261.07 and enrollment in the College of Education.

577 Instrumental Music in Secondary Schools U 3
The role of instrumental music instruction in public education, techniques of teaching instrumental music, study of music appropriate to musical organizations in secondary schools.
Au, Wi Qtrs. 3 cl, 1 1-hr lab. Prereq: Enrollment in the College of Education.

578 Music Education Curriculum U 3
A study of the musical and learning processes involved in the music education curriculum from kindergarten through high school.
Wi, Sp Qtrs. 3 cl. Prereq: Enrollment in the College of Education.

586 Student Teaching in Music in Elementary Schools U 3-8

Assignment to area elementary schools for observation and teaching experiences with groups of students and cooperating teachers; students attend weekly seminars with University supervisors.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 8 cr hrs.

587 Student Teaching in Music in Secondary Schools U 3-8

Assignment to area secondary schools for observation and teaching experiences with groups of students and cooperating teachers; students attend weekly seminars with University supervisors.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 8 cr hrs.

591† Survey of the Music Industry U 3

Economic aspects of music in America with reference to recordings, films, TV, radio, music theater, booking, management, publishing and manufacturing. Levey.

Au Qtr. 3 cl. Prereq: Sr standing or permission of instructor.

601 Applied Music (Principal) U 1 or 2

Elective applied music instruction at the senior level for students in the BME curriculum; continuation of study of literature, technique, and musicianship.

1 1-hr lesson, studio classes arr. Prereq: 501 and permission of applied area faculty. Open to other qualified students within the limits of instructional facilities by permission of director of School of Music. Repeatable to a maximum of 8 cr hrs for each decimal subdivision.

601.01 Piano

Su, Au, Wi, Sp Qtrs.

601.02 Voice

Su, Au, Wi, Sp Qtrs.

601.03 Strings

Su (1st term), Au, Wi, Sp Qtrs.

601.04 Woodwinds

Su (1st term), Au, Wi, Sp Qtrs.

601.05 Brass

Su (1st term), Au, Wi, Sp Qtrs.

601.06 Organ

Su (1st term), Au, Wi, Sp Qtrs.

601.07 Percussion

Au, Wi, Sp Qtrs.

601.08† Harpsichord

Au, Wi, Sp Qtrs.

602 Applied Music (Major)

Applied music instruction required in BM curricula in performance to develop professional qualities of musicianship; full recital required in senior year.

1 1-hr lesson, studio classes arr. Prereq: 502 and written permission of applied area faculty. Repeatable to a maximum of 18 cr hrs for each decimal subdivision.

602.01 Piano U 3 or 6

Su, Au, Wi, Sp Qtrs.

602.02 Voice U 2 or 4

Su, Au, Wi, Sp Qtrs.

602.03 Strings U 3 or 6

Su (1st term), Au, Wi, Sp Qtrs.

602.04 Woodwinds U 3 or 6

Su (1st term), Au, Wi, Sp Qtrs.

602.05 Brass U 3 or 6

Su (1st term), Au, Wi, Sp Qtrs.

602.06 Organ U 3 or 6

Su (1st term), Au, Wi, Sp Qtrs.

602.07 Percussion U 3 or 6

Au, Wi, Sp Qtrs.

602.08† Harpsichord U 3 or 6**602.09 Harp U 3 or 6**

Au, Wi, Sp Qtrs.

610 Alexander Technique U G 1

The relationship of kinesthetic perception and the postural reflexes to physical coordination in performance. Conable.

Au, Wi, Sp Qtrs. 2 cl. Repeatable to a maximum of 3 cr hrs.

611 Introduction to Piano Pedagogy U G 3

A critical analysis of various methods and principles of piano instruction, and of literature for the beginning and intermediate performer.

Sp Qtr. 3 cl. Prereq: 6 cr hrs in 501.01 or permission of instructor.

612 Piano Pedagogy: Group Instruction U G 3

Concepts of group piano instruction, techniques for development of keyboard musicianship, and knowledge of appropriate materials. Lowder.

Su (1st term), Au Qtrs. 3 cl. Prereq: 6 cr hrs in 501.01 or permission of instructor.

613† Piano Pedagogy: Practicum U G 3

To provide supervised experience in piano instruction and guidance in the development of sequences of instruction and in the treatment of specific teaching problems.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 611 or 612 or permission of instructor. Repeatable to a maximum of 6 cr hrs.

615 Structure and Function of the Singing Mechanism U G 3

The structure and function of the singing and breathing mechanisms as they relate to developmental teaching of voice in the formative years.

Su, Wi Qtrs. 3 cl. Prereq: Permission of instructor.

621 Analysis: The Classic Period U G 3

An analytical study of representative works from classic literature.

Wi Qtr. 3 cl. Prereq: 521 or 243.

622 Analysis: The Romantic Period U G 3

An analytical study of representative works from romantic literature. Barnes and Vedder.

Su, Wi Qtrs. 3 cl. Prereq: 521 and 243.

624* Band Scoring U G 3

Scoring for the concert band.

Au Qtr. 3 cl. Prereq: 524.

625†* Orchestra Scoring U G 3

Scoring for the orchestra.

Au Qtr. 3 cl. Prereq: 524.

631 Counterpoint I U G 3

Studies in imitation and invertible counterpoint, applied in the writing of two-and three-part inventions.

Wi Qtr. 3 cl. Prereq: 531.

633 Gregorian Chant U G 3

A study of the historical background and characteristics of plain-song, including the technical aspects of notation, modes, rhythm, and chironomy. Kuehefuhs.

Au Qtr. 3 cl.

634 Modal Counterpoint I U G 3

Counterpoint based on the vocal polyphonic style of the 16th century; analysis of representative works and practice in motet writing. Kuehefuhs.

Wi Qtr. 3 cl. Prereq: 243 and 521.

635 Composition U G 3-5

Creative writing; analysis, discussion, employment of devices used in contemporary music. Barnes and Huff.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 535. Repeatable to a maximum of 9 cr hrs.

636 Musical Uses of Electronic Devices U G 3

Characteristics and uses of electronic devices for compositional, analytic, and experimental purposes in music. Wells.

Au Qtr. 3 cl. Prereq: Permission of instructor.

637 Electronic Composition U G 3

Creative writing employing electronic sound sources. Wells.

Au, Sp Qtrs. 3 cl. Prereq: 535 and 636. Repeatable to a maximum of 6 cr hrs.

640* Music in the Middle Ages U G 3

The development of western music through the 14th century.

Su Qtr. 3 cl. Prereq: 521, or 531, and 243.

641†* Music in the Renaissance U G 3

The development of musical styles from Dufay through Palestrina and Lassus.

Wi Qtr. 3 cl. Prereq: 521 or 531, and 243.

642* Music in the Baroque Period U G 3

The development of musical styles from Monteverdi through Bach.

Sp Qtrs. 3 cl. Prereq: 521 or 531, and 243.

643* Music in the Classic Period U G 3

Vocal and instrumental music of the middle and late 18th century.

Au Qtr. 3 cl. Prereq: 521 or 531, and 243.

644* Music in the Romantic Period U G 3

The music of the romantic period in Germany and France.

Su, Wi Qtrs. 3 cl. Prereq: 521 or 531, and 243.

645 Modern Music U G 3

Major trends in the development of music since 1900.

Su, Sp Qtrs. 3 cl. Prereq: 521 or 531, and 243.

646†* History of Music in the United States U G 3

A survey of music in the United States from colonial times until the present.

Su Qtr. 3 cl. Prereq: Jr or sr standing.

647† Individual Composers: Their Lives and Works U G 3

A comprehensive study of the works of an individual composer; topic varies from year to year.

Wi Qtr. 3 cl. Prereq: 521 or 531, and 243.

648* Chamber Music Literature U G 3

A survey of chamber music of the classic and romantic periods.

Su, Au Qtrs. 3 cl. Prereq: 521 or 531, and 243.

649* Symphonic Literature U G 3

A survey of orchestral music from the classic period to the present.

Wi Qtr. 3 cl. Prereq: 521 or 531, and 243.

650†* Choral Literature U G 3

A survey of choral music from the Renaissance to the present.

Au Qtr. 3 cl. Prereq: 521 or 531, and 243.

651* Opera Literature U G 3

A survey of the antecedents of opera and a study of representative works from each of the major periods in the history of opera.

Sp Qtr. 3 cl. Prereq: 521 or 531, and 243.

652 Song Literature U G 3

The study of song literature including historical and philosophical backgrounds selected to meet the needs of the student, artist, or teacher; program building.

Au Qtr. 3 cl.

653†* Piano Literature U G 3

A study of the piano sonata and other characteristic forms from the pre-piano period to the present time. Haddad and Tetley-Kardos.

Sp Qtrs. 3 cl. Prereq: 521 or 531, and 243.

654* Organ Literature U G 3

A comprehensive survey from the earliest compositions to the works of present-day composers. Held.

Sp Qtr. 3 cl. Prereq: 521 or 531, and 243.

660 Advanced Conducting (Instrumental) U G 3

An attempt to develop the power to interpret the larger forms of instrumental literature and to read from full score. McGinnis and Haddock.

Su (1st term), Au, Wi, Sp Qtrs. 3 cl. Prereq: 262.11 and 521.

661 Advanced Conducting (Choral Vocal) U G 3

Development of power to interpret the larger forms of choral literature and to read from full score. Casey.

Su (1st term) Wi, Sp Qtrs. 3 cl. Prereq: 262.12 and 521.

662 Choral Repertoire U G 2

Reading and study of sacred and secular choral literature. Casey.

Su, Au Qtrs. 1 cl, 1 2-hr lab. Repeatable to a maximum of 6 cr hrs.

670 Medieval, Renaissance, and Baroque Musical Instruments U G 3

A study of the early development of musical instruments and their uses; introduction to instrumental techniques and performance practices in these periods. Maas.

Sp Qtr. 3 cl.

680 Collegium Musicum U G 2

Study and performance of music from the medieval, Renaissance, and baroque periods. Maas.

Au, Wi, Sp Qtrs. 2 hr rehearsal, 1 cl (alternative wks.)

681 Liturgies U G 3

Historic liturgies of the church as a background for the work of the church musician; contemporary movements in liturgical practice. Held.

Wi Qtr. 3 cl.

682 Hymnology U G 3

An historical survey of Christian hymnody; consideration of criteria for judging texts and tunes with regard to artistic quality and liturgical suitability. Held.

Au Qtr. 3 cl. Prereq: 423 or permission of instructor.

683 Techniques and Materials for Church Choirs U G 3

A study of anthem materials, chants and propers, with consideration of programming and performance. Held.

Sp Qtr. 3 cl.

684 Field Experience in Church Music U 2

Supervised experience in the actual church situation. Held.

Au, Wi, Sp Qtrs. Prereq: 560 and 683, or concur 683. Repeatable to a maximum of 6 cr hrs.

687 Byzantine and Medieval Slavic Music and Liturgy U G 3

The history of Byzantine and medieval Slavic Church music, hymnography, and poetry. Jakovljevic.

Au Qtr.

688 Byzantine Musical Notation, 1300-1500 A.D. U G 3

A survey of Byzantine medieval neumatic notation and transcription of Byzantine melodies from the manuscripts of the 14th and 15th centuries. Jakovljevic.

Wi Qtr. Prereq: 243 or equiv with written permission of instructor.

693 Individual Studies U G 1-5

Individual studies in specified problems in the field of music.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

694 Group Studies U G 1-5

Supervised group studies of special problems in the field of music.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

700 Applied Music (Secondary) U G 1 or 2

Applied music study in areas other than a student's major or principal area.

1 1-hr lesson, studio classes arr. Prereq: grad standing in music or permission of the director of the school of music. Repeatable to a maximum of 12 cr hrs for each decimal subdivision.

700.01 Piano

Su, Au, Wi, Sp Qtrs.

700.02 Voice

Su, Au, Wi, Sp Qtrs.

700.03 Strings

Su (1st term), Au, Wi, Sp Qtrs.

700.04 Woodwinds

Su (1st term), Au, Wi, Sp Qtrs.

700.05 Brass

Su (1st term), Au, Wi, Sp Qtrs.

700.06 Organ

Su (1st term), Au, Wi, Sp Qtrs.

700.07 Percussion

Au, Wi, Sp Qtrs.

700.08† Harpsichord**700.09 Harp**

Au, Wi, Sp Qtrs.

701 Applied Music (Principal) U G 1 or 2

Applied music study with special emphasis on literature and performance practices.

1 1-hr lesson, studio classes arr. Prereq: Placement exam or permission of applied area faculty. Repeatable to a maximum of 12 cr hrs for each decimal subdivision.

701.01 Piano

Su, Au, Wi, Sp Qtrs.

701.02 Voice

Su, Au, Wi, Sp Qtrs.

701.03 Strings

Su (1st term), Au, Wi, Sp Qtrs.

701.04 Woodwinds

Su (1st term), Au, Wi, Sp Qtrs.

701.05 Brass

Su (1st term), Au, Wi, Sp Qtrs.

701.06 Organ

Su (1st term), Au, Wi, Sp Qtrs.

701.07 Percussion

Au, Wi, Sp Qtrs.

701.08† Harpsichord**701.09† Harp****711 Theory Pedagogy U G 3**

The teaching of music theory in colleges and secondary schools.

Su Qtr. 5 cl. Prereq: Music 4th yr standing.

727 Keyboard Harmony for Graduate Students U G 3

Application of keyboard musicianship, including sight reading, harmonization of melodies, improvisation, transposition, realization of figured bass and modulation.

Su (1st term), Au Qtrs. 3 cl. Prereq: 264.01, 423, or equiv with written permission of instructor. Not open to students with credit for 627.

732†* Fugue U G 3

Detailed study of the fugue; writing of three- and four-voiced fugues.

Sp Qtr. 3 cl. Prereq: 631.

752 Performance Literature U G 3

Intensive study of representative literature for the instrument from each style period.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Admission to MM curriculum or permission of instructor. Repeatable to a maximum of 6 cr hrs for each decimal subdivision.

752.01 Piano**752.02 Voice****752.03 Strings****752.04 Woodwinds**

Wi Qtr.

752.05 Brass**752.06 Organ****752.07 Percussion****756 Improvisation with Orff Instruments U G 3 or 5**

A study of the development of children's musical concepts through improvisation experiences and the use of orff instruments. Tolbert.

Su, Au Qtrs. 1 cl, 2 1½-hr. labs. Prereq: 570 or equiv with written permission of instructor.

760 Basic Concepts in Music Education U G 3

The principles of music education and of the educational and cultural objectives derived from related disciplines which give direction and purpose to the music education program. Cady and Tolbert.

Su, Au Qtrs. 3 cl. Prereq: Ed 586 or 587 or equiv.

761 Principles of Music Learning U G 3

Analysis of the learning process in music as related to problems of music instruction to the public school. Costanza.

Sp Qtr. 3 cl. Prereq: Ed 586 or 587 or equiv.

762* Principles and Practices in Elementary School Music U G 3

Analysis and appraisal of the music program in elementary schools including the relationship of music to the total school program. Tolbert.

Su Qtr (1st term). 3 cl. Prereq: 571 or equiv.

763†* Literature of Elementary School Music U G 3

A critical study of folk and art music of various cultures and historic periods for the general vocal and listening activities of the integrated curriculum. Tolbert.

Su Qtr (1st term). 3 cl. Prereq: 571 or equiv.

764* Principles and Practices in Vocal Music Education U G 3

Analysis and appraisal of the organization, purpose, and development of the vocal music program in secondary schools.

Su Qtr (1st term). 3 cl. Prereq: 575 or equiv.

765†* Literature for Vocal Music Education U G 3

A study of vocal literature of various cultures and historic periods for use with choral groups in the secondary music program.

Su Qtr (2nd term). 3 cl. Prereq: 575 or equiv.

766* Teaching Practices in General Music U G 3

Study of current concepts in organizing and teaching general music in the secondary school. Ramsey.

Su Qtr (2nd term). 3 cl. Prereq: 573 or equiv.

767* Curricular Trends in General Music U G 3

Analysis and development of programs in general music in which music is taught with reference to other art forms. Meeker and Tolbert.

Su Qtr (1st term). 3 cl. Prereq: Permission of instructor.

768* Principles and Practices in Instrumental Music Education U G 3

Role of instrumental music in the public schools; relationship to society and the total music program, historical development, evaluation, and future trends. Meeker and Von Gruenigen.

Su Qtr (1st term). 3 cl. Prereq: 577 or equiv.

769* Literature for Instrumental Music Education U G 3

Relationship of teaching materials and performance repertory to education objectives: selection of literature, interpretation, rehearsal procedures, conducting problems, attainment of musical understanding through literature.

Su Qtr (1st term). 3 cl. Prereq: 577 or equiv.

770 Introduction to Research in Music Education U G 3

A study of methods of research as applied to problems in school music. Costanza and Meeker.

Su Qtr (1st term). 3 cl. Prereq: Ed 586 or 587 or equiv.

771†* Supervision of Music Education Programs U G 5

A study of specific problems of music supervision with special attention to music program evaluation and curriculum development. Ramsey.

Su Qtr. 3 cl. Prereq: Permission of instructor.

780 Ensembles U G 1-2

Study and performance of literature determined by student's participation in a specific ensemble.

Su, Au, Wi, Sp Qtrs. 3 or more hrs rehearsal each wk.

Prereq: Admission by audition and permission of instructor. Repeatable to a maximum of 12 cr hrs.

780.01 Choral

Casey.

780.02 Orchestral

Haddock.

780.03 Band

McGinnis.

780.04 Chamber and Small Ensembles**786 Introduction to Bibliographic Method U G 3**

The collection, examination, and documentation of information about music; including general as well as music library materials. Mixer.

Su, Au Qtrs. 3 cl. Prereq: 521 or 531, and 243.

790 Problems in Vocal Music Education U G 1-5

Study of problems encountered in the teaching and supervising of vocal music.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 10 cr hrs.

791 Problems in Instrumental Music Education U G 1-5

Study of problems encountered in teaching, supervising, and organization of the instrumental music program.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 10 cr hrs.

792 Choral Problems U G 1-5

Study of the problems encountered in developing choruses and church choirs. Casey.

Su (1st term), Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

801 Applied Music (Principal) G 1, 2, or 4

Advanced applied music study with emphasis on musicianship, pedagogical techniques, and literature.

1 1-hr lesson, studio classes arr. Prereq: Placement exam or permission of applied area faculty. Open to other qualified students within the limits of instructional facilities by permission of director of School of Music. Repeatable to a maximum of 16 cr hrs for each decimal subdivision.

801.01 Piano

Su, Au, Wi, Sp Qtrs.

801.02 Voice

Su, Au, Wi, Sp Qtrs.

801.03 Strings

Su (1st term), Au, Wi, Sp Qtrs.

801.04 Woodwinds

Su (1st term), Au, Wi, Sp Qtrs.

801.05 Brass

Su (1st term), Au, Wi, Sp Qtrs.

801.06 Organ

Su (1st term), Au, Wi, Sp Qtrs.

801.07 Percussion

Au, Wi, Sp Qtrs.

801.08† Harpsichord**801.09† Harp**

802 Applied Music (Major) G 2 or 4

A specialized and intense study of literature and techniques of performance.

1 1-hr lesson, studio classes arr. Prereq: Placement exam. Repeatable to a maximum of 16 cr hrs for each decimal subdivision.

802.01 Piano

Su, Au, Wi, Sp Qtrs.

802.02 Voice

Su, Au, Wi, Sp Qtrs.

802.03 Strings

Su (1st term), Au, Wi, Sp Qtrs.

802.04 Woodwinds

Su (1st term), Au, Wi, Sp Qtrs.

802.05 Brass

Su (1st term), Au, Wi, Sp Qtrs.

802.06 Organ

Su (1st term), Au, Wi, Sp Qtrs.

802.07 Percussion

Au, Wi, Sp Qtrs.

802.08† Harpsichord**802.09† Harp****803 Conducting G 4**

A specialized and intense study of conducting techniques.

Su, Au, Wi, Sp Qtrs. 3 cl. 1 1-hr lab. Prereq: Placement exam. Open only to conducting majors in the MM curriculum. Repeatable to a maximum of 12 cr hrs for each decimal subdivision.

803.01 Choral**811 Piano Pedagogy G 3**

A critical analysis of various methods and principles of piano instruction, and of literature for beginning and intermediate performers.

Su (1st term) Qtr. 5 cl. Prereq: 611 or equiv and admission to MM or MA programs in piano.

812* Vocal Pedagogy G 3

An analysis of the principles and practices current in the teaching of voice.

Sp Qtr. 5 cl. Prereq: Music grad standing and minimum of 6 cr hrs of applied study in voice.

813†* String Instrument Pedagogy G 3

An analysis of the principles and practices current in the teaching of strings.

Su (1st term) Qtr. 5 cl. Prereq: Music grad standing and minimum of 6 cr hrs of applied study in string instruments.

814* Woodwind Instrument Pedagogy G 3

An analysis of the principles and practices current in the teaching of woodwinds. Titus.

Su (1st term) Qtr. 5 cl. Prereq: Music grad standing and minimum of 6 cr hrs of applied study in woodwind instruments.

815†* Brass Instrument Pedagogy G 3

An analysis of the principles and practices current in the teaching of brass instruments.

Su (1st term) Qtr. 5 cl. Prereq: Music grad standing and minimum of 6 cr hrs of applied study in brass instruments.

821 Advanced Analysis: The Classic Period G 5

An analytical study of selected major works from the classic literature. Poland.

Au Qtr. 3 cl. Prereq: 621 or 622.

822 Advanced Analysis: The Romantic Period G 5

An analytical study of selected major works from the romantic literature.

Wi Qtr. 3 cl. Prereq: 2 of the following courses: 621, 622, or 821.

823 Advanced Analysis: Post-Romantic to Modern Music G 5

Analysis of selected works reflecting the evolution from the post-romantic period to contemporary styles.

Sp Qtr. 3 cl. Prereq: 821 or 822.

826 Development of Music Theory I G 5

A study of the principal treatises on music theory before 1400. Green.

Au Qtr. 3 cl.

827 Development of Music Theory II G 5

A study of the principal treatises on music theory from 1400 to 1700. Green.

Su, Wi Qtrs. 3 cl.

828 Development of Music Theory III G 5

Critical study of music and theory texts from 1700 to 1900. Green.

Sp Qtr. 3 cl.

829 Contemporary Theories of Music G 5

Fundamental concepts of theory construction and experimental verification of contemporary theories of music.

Sp Qtr. 3 cl. Prereq: Music grad standing.

831†* Contrapuntal Techniques G 3

Analysis and stylistic writing of canons, invertible counterpoint, and variations.

Sp Qtr. 3 cl. Prereq: 631.

833* Contrapuntal Techniques G 3

Contrapuntal techniques in the works of 20th-century composers.

Sp Qtr. Prereq: Permission of instructor.

834 Modal Counterpoint II G 3

Advanced counterpoint based on the vocal polyphonic style of the 16th century. Kuehefuhs.

Sp Qtr. 3 cl. Prereq: 634.

835 Advanced Composition G 3-5

Creative writing in the large forms at an advanced level. Barnes and Huff.

Su, Au, Wi, Sp Qtrs. Prereq: 2 qtrs of 635 or equiv. Repeatable to a maximum of 15 cr hrs.

837 Advanced Electronic Composition G 3

Wells.

Wi, Sp Qtrs. 3 cl. Prereq: 637. Repeatable to a maximum of 6 cr hrs.

838 Seminar in Experimental Music G 3

The application of electronic devices to analytical and experimental problems in music. Butler.

Sp Qtr. 3 cl. Prereq: 636.

841* Studies in Medieval Music G 5

Problems and research in music before 1400. Hoppin.

Au, Sp Qtrs. 3-5 cl.

842* Studies in Renaissance Music G 5

Problems and research in music between 1400 and 1600. Mixter.

Wi Qtr. 3-5 cl.

- 843* Studies in Baroque Music G 5**
Problems and research in music between 1600 and 1750. Livingston.
Au Qtr. 3-5 cl.
- 844†* Studies in Classic Music G 5**
Problems and research in music of the late 18th century. Livingston.
Au Qtr. 3-5 cl.
- 845* Studies in Romantic Music G 5**
Problems and research in music of the 19th century. Livingston.
Su Qtr. 3-5 cl.
- 846†* Studies in Modern Music G 5**
Problems and research in music of the 20th century. Hoppin.
Su, Sp Qtrs. 3-5 cl.
- 847† Development of Notation: 900-1600 G 5**
A survey of notational principles from Gregorian neumes through the mensural system of the Renaissance, with exercises in transcription.
Au Qtr. 3 cl. Prereq. or concur: 640.
- 848 Advanced Studies in Notation G 5**
An intensive investigation of the problematic aspects of pre-mensural and mensural notation.
Su, Wi Qtrs. 3 cl. Prereq: 847.
- 850†* History of Performance Practices G 5**
A study of primary sources pertaining to contemporary attitudes and practices in the performance of music from the Middle Ages to the present. Livingston.
Au, Sp Qtrs. 3 cl.
- 851†* Musical Sources and Historiography G 5**
A study of music historiography, supplemented by the examination of musical documents from each of the periods of music history. Mixter.
Sp Qtr. 3 cl. Prereq: 786.
- 852 Performance Literature G 3**
Concentrated study of representative literature from each style period.
Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 752 and admission to DMA program. Repeatable to a maximum of 9 cr hrs.
- 852.01 Piano**
852.02 Voice
852.03 Strings
852.04 Woodwinds
852.05 Brass
852.06 Organ
- 872†* Administration in Music Education G 3**
Seminar.
Sp Qtr. 3 cl. Prereq: Permission of instructor.
- 873 Seminar: Comparative Music Education G 3 or 5**
An analysis and comparison of music education programs in other countries including the study of curriculum, teaching procedures, and programs of teacher preparation. Tolbert.
Su Qtr. 3 or 5 cl. Prereq: Written permission of instructor.
- 874 Seminar: The Development of Music Education G 3 or 5**
The development of music education from the early Greek society to the present day tracing major trends and the influence of certain persons.
Su Qtr. 3 or 5 cl. Prereq: Written permission of instructor.
- 875 Seminar: Psychological Factors in Music Education G 3 or 5**
A study of the psychological factors, theory, and research in the musical development of children and adolescents with implications for school music education programs. Costanza.
Au Qtr. 3 or 5 cl. Prereq: 761
- 876 Seminar: Evaluation and Measurement in Music Education G 3 or 5**
A study of the theory, principles, and techniques of evaluation and measurement in music education. Costanza.
Sp Qtr. 3 or 5 cl. Prereq: 761 and Psych 510.
- 877 Seminar: Social Factors in Music Education G 3 or 5**
A study of the social influences on music education and their relationship to school music programs and practices. Cady.
Wi Qtr. 3 or 5 cl. Prereq: 760.
- 878 Seminar: Music Education and the Curriculum G 3 or 5**
A study of theory and practice of curriculum development in school music. Ramsey.
Sp Qtr. 3 or 5 cl. Prereq: 875 and 877 or equiv with written permission of instructor.
- 879 Seminar: Music in Higher Education G 3 or 5**
The role of music in higher education historically and in contemporary, including its philosophical bases, degree programs, and organizations.
Au Qtr. 3 or 5 cl.
- Medieval and Renaissance Culture**
See Medvl and Renais S 888.
- Medieval and Renaissance Literature**
See Medvl and Renais S 889.
- 893 Individual Studies G 1-5**
Individual research projects not connected with the dissertation.
Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.
- 894 Group Studies G 3-5**
Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.
- 894.01 Seminar in Music Theory**
Barnes, Green, and Poland.
894.02 Seminar in Music Education
Costanza.
894.03 Seminar in Music History
Livingston and Hoppin.
- 899 Interdepartmental Seminar G 1-5**
See Interdepartmental Seminars.

902 Applied Music (Major) G 2 or 4

Advanced study of music literature in performance including concert recital presentation.

Su, Au, Wi, Sp Qtrs. 1-2 1-hr lessons, studio classes arr. Prereq: Placement exam. Open only to students admitted to DMA program. Repeatable to a maximum of 12 cr hrs in each decimal subdivision.

902.01 Piano

902.02 Voice

902.03 Strings

902.04 Woodwinds

902.05 Brass

902.06 Organ

995 Advanced Research Practicum G 1-5

Utilization of research processes and creative techniques appropriate to the field of inquiry—analysis, survey, experimentation, historiography, philosophy.

Su, Au, Wi, Sp Qtrs. Prereq: 45 grad cr hrs and permission of instructor. Repeatable to a maximum of 10 cr hrs.

998 Research in Music: Thesis G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

999 Research in Music: Dissertation G Arr

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

National Security Policy Studies

Office: 199 West 10th Avenue, 422-1681, Mershon Center for Education in National Security

200 National Security Policy and Policymaking U 5

Survey and policies affecting the security of the United States and of the process by which such policies are formulated, executed, and appraised.

Au, Wi Qtrs.

693 Individual Studies in National Security Policy U G 1-5

A special national security topic is assigned to each student for reading and a report.

Au, Wi, Sp Qtrs.

702 Introduction to National Security U G 3-5

Examination of approaches taken by various social science disciplines to field of national security; survey of literature in field; identification of major problem areas.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Permission of instructor.

785 Research Principles and Techniques in Leadership and Public Policy U G 3-5

Examination of leadership and policy problems and the application thereto of social science analytical techniques and findings.

Wi Qtr. 1 cl. Prereq: Permission of instructor. Repeatable with permission of instructor to a maximum of 10 cr hrs.

801 Seminar on Social Science**Relationships to Public Policy G 3-5**

Examination of the contribution of the social and behavioral sciences to specific public policy issues between and within national societies.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Permission of instructor. Repeatable with permission of instructor to a maximum of 10 cr hrs.

27
NRE 220 Main+Wildlife - A Changing World
Intro to wildlife as nat. res.
Not open to NRE Fisheries + wildlife majors

Natural Resources

Office: School of Natural Resources, 113 Agricultural Administration Building, 2120 Fyffe Road, 422-2265

189 Work Experience in Natural Resources U 3

The student must secure approval of advisor prior to employment and submit a final written report by fourth week of first quarter of school following the work.

Su, Au, Wi, Sp Qtrs. Equiv of 10 wks employment.

Prereq: Permission of major adviser. Repeatable to a maximum of 6 cr hrs. Not open to students with credit for 489.

201 Introduction to Conservation of Natural Resources U 3

Nature and scope of environmental problems; technical and socio-economic aspects of the solution of such problems. Roth.

Au, Sp Qtrs. 3 cl, 1 all-day field trip.

202 Conservation Agencies U 3

History and responsibilities of governmental agencies and some private organizations for natural resources management; representatives of conservation agencies present programs and problems. Johnson.

Wi Qtr. 3 cl. Prereq: 201 or Geog 530.

204 Outdoor Recreation in the USA U 3

Outdoor recreation in America involving wilderness, national parks, and other public and private recreation areas and its impact on the public.

Au Qtr. 3 cl. Not to be used toward specialization requirements for park and recreation majors.

310 Natural Resources Interpretation/ Education Program Development in the Urban Setting U 3

Field experience in planning and implementing natural resources interpretation/education programs/projects in an urban community. Bowman.

Sp Qtr. 3 cl, field trips arr. Prereq: 201.

510 Natural History of Ohio U G 5

Field course emphasizing inter-relationship among physical and biological factors in various ecological settings; field techniques and identification skills used for research paper; teacher section offered. M. Bowman.

Su, Au Qtrs. 2 2½-hr cl and field trip arr. Cannot be taken concur with Botany 210 or Zoology 220.

515 Interpretive Centers U 5

A detailed examination of visitor centers, nature centers and other interpretive centers; considerations include their function, visitorship, and integration with the natural environment. Cherem.

Wi Qtr. 4 cl, 2 hrs lab. Prereq: 15 cr hrs of content base in courses from the student's major specialization.

516 Interpretive Exhibit Preparation U 5

Design, construction, and evaluation of active, visitor-involvement exhibits for use in public and private interpretive centers. Cherem.

Au Qtr. 4 cl, 2 hrs lab. Prereq: 515 or equiv with permission of instructor.

517 Interpretive Field Studies U 2-5

A short-course, inter-session course, or study tour which will involve travel to regional or national interpretive facilities. In-depth analysis of each facility.

Su Qtr. 2-5 hrs cl. Prereq: 515 or 516 or equiv with permission of instructor. Repeatable to a maximum of 10 cr hrs.

518 Interpretive Programming and Planning U 5

Case studies of public and private interpretive programs; practice in interpretive master planning and in the comprehensive programming of interpretive services for a site. Cherem and Roth.

Sp Qtr. 5 cl. Prereq: Two courses from among 515, 516, 517 or equiv with permission of instructor.

Natural Resources Economics

See Agr Econ 531. Offered in cooperation with Agricultural Economics.

540 Principles of Park and Recreation Management U G 5

Structure and behavior of the physical, institutional, and economic dimensions of public outdoor recreation management at the state and national levels of government. Andrew.

Au, Sp Qtrs. 5 cl. Prereq: 201, or equiv with permission of instructor.

571 Resident Outdoor Education Participation U G 2-5

Participation as assistant teachers in resident outdoor education sessions conducted at Barnebey Center for Environment Studies plus preessions, postsessions, and performance evaluation. Johnson.

Au, Sp Qtrs. Arr. Prereq: 201 or EDP standing and permission of instructor. Repeatable to a maximum of 10 cr hrs.

Economics of Environmental Quality

See Econ 591. Offered in cooperation with Economics.

600 Natural Resources Problems, Programs, and Policies U G 4

Analytical study of contemporary and future problems of natural resources conservation and programs and policies related to their solution. Vertrees.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 201 or Geog 530.

601 Interactions in Natural Resources Management U G 4

Impact of man's activity on natural resources; interrelationships between resources and physical and social environment and prospects for effective resources management. Disinger.

Su (1st term), Au, Sp Qtrs. 2-2-hr cl. Prereq: 600 or grad standing with written permission of instructor.

602 Watershed Resource Evaluation U G 5

In-depth field study and evaluation of natural resource parameters and management interactions within a small watershed. Disinger.

Su Qtr. 10 day field study between quarters;

post-study meetings and group report. Prereq: 601; Geol&Min 204 or Ag M&Sys 570; or equiv with permission of instructor.

610 Environmental Interpretation Methods U G 5

The concept of the interpreter, basic interpretive principles, visitor characteristics, and the range of interpretive services. Cherem.

Su, Au, Sp Qtrs. 5 cl. Prereq: 15 cr hrs of content base in the student's major specialization.

611* Field Course in Conservation and Outdoor Education U G 6

Study and field work in environmental management, and environmental conservation and outdoor education. Roth.

Su (1st term), Au Qtrs. Concur: 692 and permission of instructor.

612 Environmental Education in the Park Setting U G 3

Use of public park facilities and services in accomplishing environmental education objectives; offered in cooperation with public park agencies. Disinger.

Sp Qtr. 1 3-hr cl. Prereq: Intended for certified in-service teachers; others with permission of instructor only.

620 Management of Fisheries U G 5

Fisheries resource management problems and programs including biological, economic, and social factors of local, national, and international importance. Triplett.

Wi Qtr. 5 cl. Prereq: Zool 313 or equiv.

621 Principles of Wildlife Management U G 5

Introduction to the social, economic, and biological principles related to the management and utilization of wildlife resources. Good and Townsend.

Au, Wi Qtrs. 5 cl. Prereq: Zoology 313 or equiv.

622 Field Laboratory in Renewable Natural Resources Management U G 15

Field experience in identifying and solving problems in the management of renewable natural resources; work in a variety of habitats using appropriate tools and techniques. Good and Townsend.

Sp Qtr. Arr. Full time of student in the field and classroom.

642 Urban Parks and Recreation Management U G 3

Organization and administration of metropolitan, county, and municipal areas; land acquisition and planning of these facilities.

Wi, Sp Qtrs. 3 cl. Prereq: 540.

643 Outdoor Recreation by Private Enterprise U G 4

Factors affecting the development of the various types of recreational facilities; case studies of several private recreation areas.

Au Qtr. 4 cl. Prereq: 540, Econ 200 or equiv with permission of instructor.

644 Park Design U G 5

Interrelationship of facility design and recreation land management, including various types of parks and criteria for their location and design. Wenner.

Au, Wi Qtrs. 3 cl, 2 2½-hr cl. Prereq: 540.

684 Internships in Natural Resources Professions U G 6

Internship employment for a minimum of three months in natural resources professions arranged with cooperating natural resources or environmental agencies, organizations, or industries.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of division chairman. Repeatable to a maximum of 12 cr hrs.

684.01 Environmental Education

684.02 Fisheries and Wildlife

684.03 Forestry

684.04 Parks and Recreation Administration

684.05 Resource Development

684.06 Unclassified

692 Workshop in Environmental Education U G 3

Problems of instruction in environmental education with consideration of both traditional approaches and current developments in content and methodology. Bowman, Disinger, Johnson, Roth.

Su, Au, Wi, Sp Qtrs. 1 3-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

693 Individual Studies in Natural Resources U G 2-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

693.01 Environmental Education

693.02 Fisheries and Wildlife

693.03 Forestry

693.04 Parks and Recreation

693.05 Resource Development

693.06 Unclassified

694 Group Studies U G 2-5

Group studies on the nature and management of natural resources encompassed in one of the following areas.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs for each subdivision.

694.01 Environmental Education

694.02 Fisheries and Wildlife

694.03 Forestry

694.04 Parks and Recreation

694.05 Resource Development

694.06 Unclassified

701 Simulation in Natural Resources Management U G 4

Interactive aspects of natural resources management, with particular respect to pollution problems, primarily through group involvement in a computer simulation. No computer background required. Disinger.

Wi Qtr. 2 cl, 1 3-hr lab. Prereq: Permission of instructor.

702†* Alternative Futures and Resource Management U G 3

A critical analysis of modeling approaches to the extrapolation of alternative world futures, with particular attention to natural resources management considerations. Disinger.

Wi Qtr. 3 cl. Prereq: 600 or equiv with permission of instructor. Offered in cooperation with Economics.

785 Research Methods in Natural Resources Management U G 4

Research design; experimental procedures; information-gathering tools, including reporting units for resource-related data; statistical methods; and procedures for analysis of data.

Wi Qtr. 2 2-hr cl. Prereq: Math 117, 120.03, or 150; an introductory course in statistics, and permission of instructor.

786 Applications of Experimental Design and Data Analysis to the Measurement of Natural Resources U G 5

Measures of data bases for natural resources. The theory and techniques of sampling-inventory, experimental design and data analysis. Kasile.

Wi Qtr. 3 cl, 2 2-hr lab. Prereq: Math through integral calculus and Stat 529 or permission of instructor.

795 Parks and Recreation Research Seminar U G 2

Presentation, evaluation and discussion of current parks and recreation research and research needs. Wenner.

Au Qtr. 1 2-hr cl. Prereq: Grad standing or honors student in parks and recreation administration. Repeatable to a maximum of 4 cr hrs.

797 Interdepartmental Seminar U G 1-5

See Interdepartmental Seminars.

Su, Au, Wi, Sp Qtrs. Offered in cooperation with Civil Engineering.

811* Program Development in Environmental Education G 3

Development of environmental education programs with respect to the situations of participants. Existing programs are studied as models to aid in development of unique programs. Roth.

Su (1st term), Au Qtrs. 1 3-hr cl. Prereq: 692 or equiv and permission of instructor.

819 Interpretive Research and Theory G 5

Analysis of the theoretical basis for interpretive technique. Review of current research in environmental interpretation and exposure to models for evaluation of interpretive services. Cherem.

Wi Qtr. 5 cl. Prereq: 518 and 610 and 515 or 516 or 517 or equiv and Sociol 650.

840 Policies Relating to Governmental Recreation Areas G 3

Organizational policies and structures relating to federal, state, and local governmental agencies. Douglass.

Au Qtr. 3 cl. Prereq: 540, and 642 or 643, or 644, or equiv with permission of instructor.

897 Interdepartmental Seminar in Natural Resources G 1

See Interdepartmental Seminars.

Su, Au, Wi, Sp Qtrs.

999 Research G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Naval Science

Office: 110 Converse Hall, 2121 Tuttle Park Place

The sequence of naval science courses is the same for all officer candidate students for the first two academic years. Officer candidate students accepted into the Marine Corps Option will have curriculum variations with their third year. Additionally, some candidates may be required to complete courses in American Military Affairs, National Security Policy, mathematics, and/or the physical sciences. Descriptions of the course requirements for each candidate classification (scholarship/college programs) may be obtained from the Naval Science Department office.

Naval science courses are open to a limited number of civilian students with permission of the Professor of Naval Science. Initial enrollment in the NROTC Program may be completed by scheduling Naval Science 154 during fall quarter registration. Completion of Naval Science and degree requirements may lead to a commission in the U.S. Navy or the U.S. Marine Corps.

Normal sequence of Naval Science courses is as follows:

First Year: All candidates—154, 155, 156.

Second Year: All candidates—261, 262, 263.

Third Year: Navy candidates—342, 343, 341.
Marine candidates—351, 352, 353.

Fourth Year: Navy candidates 475, 476, 477.
Marine Candidates—451, 452, 453.

154 Survey of Naval Science U 3

An introduction to and survey of disciplines peculiar to naval science including a discussion of naval tasks and missions, regulations, customs, traditions, and organizational relationships.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: Enrollment in NROTC Unit or permission of instructor.

155 Naval Ship Systems U 3

Study of ship design, compartmentation, stability, buoyancy, and damage control.

Wi Qtr. 3 hrs. lec, 1 2-hr lab. Prereq: 154 or written permission of instructor.

156 Naval Ship Systems Engineering U 3

Study of conventional ship propulsion systems, auxiliary power systems, nuclear power, and new innovations in ship propulsion.

Sp Qtr. 3 hrs lecture, 1 2-hr lab. Prereq: 155 or written permission of instructor.

261 Naval Weapons Systems II U 3

Investigation of concept and technique of weapons systems, linear analysis of ballistics, and the dynamics of the basic components of weapons control systems.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 156 or permission of instructor.

262 Naval Weapons Systems III U 3

Further development of the basic principles of naval weapons.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 261.

263 Principles of Naval Organization and Administration U 3

Introduction to the structure and principles of naval organization and management.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 262.

341 Naval Operations U 3

A study of fleet operations, including tactics, tactical communications; rules of the Nautical Road, and the principles of relative motion.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 343.

342 Naval Operations and Introduction to Navigation U 3

A study of the Naval Communications system, shipboard organization and administration, and the electronic and dead reckoning methods of marine navigation.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 263.

343 Celestial Navigation U 3

The determination of position by celestial methods of navigation.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 342.

351†* Evolution of the Art of War, Part I U 3

A study of the evolution of weapons and tactics, illustrating the principles and variables of war used in certain battles from Alexander through the Mexican War.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 263 or completion of summer camp.

352†* Evolution of the Art of War, Part II U 3

A continuation of the study of evolution of the art of war from the beginning of the Civil War to the end of World War II.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 351.

353†* Modern Basic Military Strategy and Tactics U 1

A survey of modern strategical and tactical principles, and current military developments.

Sp Qtr. 1 2-hr sem. Prereq: 352.

451* Amphibious Warfare, Part I U 3

The history of amphibious warfare and its development from Gallipoli through Korea.

Au Qtr. 3 cl, 1 2-hr lab.

452* Amphibious Warfare, Part II U 3

A study of the doctrinal techniques and present concepts of amphibious warfare, including the planning phase.

Wi Qtr. 3 cl, 1 2-hr lab.

453* Leadership and the Uniform Code of Military Justice U 1

Survey of the UCMJ and a study of the psychology of human relationships and techniques of leadership as applied by Marines.

Sp Qtr. 1 2-hr sem.

475 Seapower and Maritime Affairs I U 2

An analysis of seapower and maritime affairs as related to the naval forces of the United States.

Au Qtr. 1 2-hr sem, 1 2-hr lab. Prereq: 343.

476 Seapower and Maritime Affairs II U 2

A continuation of 475 with emphasis on Soviet naval forces and maritime affairs.

Wi Qtr. 2 2-hr sem. Prereq: 475.

477 Naval Leadership U 2

A seminar study of the human relations, leadership problems, and decisions which confront the naval officer today.

Sp Qtr. 1 2-hr sem, 1 2-hr lab. Prereq: 476.

Nuclear Engineering

Office: 1133 Robinson Laboratory, 206 West 18th Avenue, 422-8519

294 Group Studies in Nuclear Engineering U 1-5

Special group studies of a selected area of nuclear engineering not provided in other courses.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

505 Introduction to Nuclear Science and Engineering U G 3

Discussion of nuclear energy and nuclear radiation; sources, methods of utilization, and projections for future engineering uses.

Su, Wi, Sp Qtrs. 3 cl. Prereq: Math 255 and Physics 133, or permission of instructor.

606 Radiological Safety U G 3

General principles of radiation, radioactivity, and protection methodology with emphasis on approved operating, handling and waste disposal procedures, also regulations and biological effects

Au Qtr. 2 cl, 1 2-hr lab.

626 Introduction to Nuclear Power U G 3

Nuclear power reactors; the economic and technical aspects of the nuclear power industry.

Su, Wi Qtrs. 3 cl. Prereq: 505 or equiv, Math 255 or equiv with permission of instructor.

Corrosion

See Metal En 635.

660 Introduction to Nuclear Reactor Theory U G 5

Introduction to the concepts of radioactive decay, cross-sections, the multiplication constant and neutron flux and to slowing-down theory, diffusion theory, Fermi-age theory, reactor kinetics, and reactor shielding.

Au Qtr. 5 cl. Prereq: 505 or equiv, Math 255 or equiv with permission of instructor.

Materials of Nuclear Technology

See Metal En 675.

694 Group Studies in Nuclear Engineering U G 1-5

Special group studies of a selected area of nuclear engineering not provided in other courses.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs.

712 Introduction to the Production, Interaction, and Detection of Nuclear Radiations U G 3

Nuclear structure, stability, reactions, and decay; interactions of electromagnetic and charged particle radiation with matter, scattering theory, and bremsstrahlung; basic processes in radiation measurements and radiation damage.

Au Qtr. 3 cl. Prereq or concur: Physics 580.01

716 Nuclear Plant Safety U G 3

Modeling theory developed and applied to nuclear systems to facilitate analysis of possible nuclear

accidents; nuclear incidents, accident description criteria for evaluation, nuclear plant siting and operational procedures.

Sp Qtr. 3 cl. Prereq: 660.

720 Reactor Dynamics and Control U G 3

Nuclear reactor and nuclear reactor system operation; control system performance requirements and control mechanisms; automatic control systems and their performance with transient and with steady state operation.

Wi Qtr. 3 cl. Prereq: 660.

Nuclear Power Plants

See Mech Eng 636.

743 Nuclear Radiations and their Measurements U G 5

A theoretical and experimental study of nuclear radiation sources, interactions with matter, detection, and shielding.

Wi Qtr. 3 cl, 1 4-hr lab. Prereq: 606 and 660.

744 Nuclear Reactor Laboratory U G 3

An experimental study of nuclear reactor operating characteristics and fundamental concepts of reactor design.

Su, Sp Qtrs. 1 cl, 1 4-hr lab. Prereq: 660 and 743.

747 Nuclear Instrumentation U G 4

A study of radiation detectors, measuring instruments, block diagrams and circuits, system dynamics, and applications to research, nuclear reactors, and measurement systems.

Su, Au Qtrs. 3 cl, 1 3-hr lab. Prereq: Elec Eng 520. Repeatable to a maximum of 8 cr hrs.

765 Analysis of Neutron Chain Reactions U G 3

The neutron distributions in infinite and finite mediums are analyzed with particular emphasis placed upon asymptotic solutions, space dependent slowing down theory, multigroup slowing down theory, and transport theory.

Wi Qtr. 3 cl. Prereq: 660 and Math 512 or equiv with permission of instructor.

766 Nuclear Engineering Design U G 3

Practice in the analysis and design of nuclear systems and the use of nuclear engineering principles.

Su, Sp Qtrs. 1 cl, 2 2-hr lab. Prereq: 660 and 743.

767 Numerical Methods in Reactor Analysis U G 3

The calculations of nuclear reactor properties using matrix methods and iterative procedures; primary emphasis on the age-diffusion theory multigroup methods.

Su Qtr. 3 cl. Prereq: 766, Math 514, and En Graph 200 or equiv.

770 Plasmas and Controlled Fusion U G 3

The Thermonuclear problem; approaches to a stable and sufficiently hot plasma; nuclear reactions, plasma kinetics, diagnostic devices, and engineering problems in research, development, and power production.

Au Qtr. 3 cl. Prereq: 660.

776 Nuclear Fuel Cycles U G 3

A study of the production, utilization, waste disposal, safeguards, and economic aspects of nuclear fuel cycles of importance in nuclear power technology.

Au Qtr. 3 cl. Prereq: 505 or 626.

Nuclear Chemical Engineering

See Chem Eng 778.

793 Individual Studies in Nuclear Engineering U G 1-10

Affords the qualified student the opportunity for independent reading, study, or laboratory work in a specialized field of interest.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

845 Advanced Laboratory Studies G 1-6

Experimental treatment of advanced nuclear engineering concepts.

Su, Au, Wi, Sp Qtrs. Prereq: 743 or 744, and permission of instructor.

880 Advanced Topics G 3

An advanced course of study for special topics in nuclear engineering; topics will be announced each quarter.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Permission of instructor. Each subdivision repeatable to a maximum of 12 cr hrs.

880.01 Reactor Physics**880.02 Reactor Kinetics****880.03 Reactor Design****880.04 Fuel Management****880.05 Radiation Effects****880.06 Radiation Transport and Shielding****880.07 Plasmas and Controlled Fusion****880.08 Nuclear Instrumentation****880.20 Special Topics****881 Nuclear Engineering Seminar G 1**

Current topics in nuclear engineering.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Grad standing in nucl en. Repeatable to a maximum of 4 cr hrs.

894 Group Studies in Nuclear Engineering G 1-5

Special group studies of a selected area of nuclear engineering not provided in other courses.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs.

999 Research in Nuclear Engineering G Arr

Research for thesis or dissertation purposes only. Su, Au, Wi, Sp Qtrs.

Nurse Anesthesiology

School of Allied Medical Professions

Office: 435 School of Allied Medical Professions Building, 1583 Perry Street, 422-0577

501 Introduction to Anesthesia P 15

Education and training of nurses in the field of anesthesia; management of technical aspects of anesthesia under physician supervision. Stafford and Jones.

Su, Au, Wi, Sp Qtrs. Prereq: Graduation from an accredited school of nursing.

502 Clinical Anesthesia P 15

Advanced study of anesthetic agents, techniques, pharmacology, and physiology with clinical applications. Stafford and Hamelberg.

Su, Au, Wi, Sp Qtrs. Prereq: 501.

503 Pediatric Anesthesia P 15

Advanced study of introductory and clinical anesthesia as applicable to pediatric anesthesia; training is received at the affiliated Children's Hospital.

Su, Au, Wi, Sp Qtrs. Prereq: 502.

504 Advanced Anesthesia I P 15

Emphasis of study will be on more difficult anesthetic procedures and in patients with difficult disease processes. Stafford and Hamelberg.

Su, Au, Wi, Sp Qtrs. Prereq: 503. Repeatable to a maximum of 45 cr hrs.

505 Advanced Anesthesia II P 15

Instruction in the care of the patient undergoing cardiopulmonary bypass and thoracic anesthesia. Stafford and Hamelberg.

Su, Au, Wi, Sp Qtrs. Prereq: 504.

506 Advanced Anesthesia III P 15

Instruction in the care of the patient undergoing neurosurgery. Stafford and Jones.

Su, Au, Wi, Sp Qtrs. Prereq: 505.

Nursing

Office: 145 Newton Hall, 1585 Neil Avenue, 422-5371

303 Basic Concepts and Skills in Patient Care U 2-3

A study of selected concepts and skills in patient care used by health professionals.

Au Qtr. 2 cl, 2-hr lab. Prereq: Enrolled in a dental hygiene or allied medical professions clinical course. Not open to students in nursing.

Open only to students registered in the School of Nursing:

305 Introduction to Theory and Nursing Process U 5

Study of nature of theory; nursing process; experiences in observation, data collection in health and illness basic to nursing.

Au Qtr. 3 cl, 2 3-hr labs. Prereq: 1st yr standing in nursing.

306 Introduction to Theory and Nursing Process U 5

Continuation of 305.

Wi, Sp Qtrs. 3 cl, 2 3-hr labs. Prereq: 305.

307 Introduction to Theory and Nursing Process U 5

Continuation of 305.

Wi, Sp Qtrs. 3 cl, 2 3-hr labs. Prereq: 305.

315 Process of Human Adaptation U 3

Study of man's adaptive processes as they relate to the individual maturing in a family within a society.

Au Qtr. 3 cl. Prereq: Sophomore standing.

316 Process of Human Adaptation U 3

Continuation of 315.

Wi Qtr. 3 cl. Prereq: Sophomore standing.

317 Process of Human Adaptation U 3

Continuation of 315 and 316.

Sp Qtr. 3 cl. Prereq: Sophomore standing.

414 Nursing Process: Coping with a Health Alteration U 4

Study of needs and interactions with individuals in health care facilities who are experiencing alterations in health. Baker and staff.

Au, Sp Qtrs. 2 cl, 8 clin hrs. Prereq: 307, 317, Anatomy 200, Physiol 312.

415 Nursing Process: Health Alterations in Nutrition and Elimination U 4

Study of needs and interactions with individuals in health care facilities who are experiencing health alterations in nutrition and/or elimination. Baker and staff.

Au, Wi, Sp Qtrs. 2 cl, 8 clin hrs. Prereq: 307, 317, Anatomy 200, Physiol 312.

416 Nursing Process: Health Alterations in Ventilation and Transport U 4

Study of needs and interactions with individuals in health care facilities who are experiencing health alterations in ventilation and transportation of materials to and from cells. Baker and staff.

Au, Wi, Sp Qtrs. 2 cl, 8 clin hrs. Prereq: 307, 317, Anatomy 200, Physiol 312.

417 Nursing Process: Health Alterations in Communication and Integration U 4

Study of needs and interactions with individuals in health care facilities who are experiencing health alterations in communication and integration. Baker and staff.

Au, Wi, Sp Qtrs. 2 cl, 8 clin hrs. Prereq: 307, 317, Anatomy 200, Physiol 312.

418 Nursing Process: Health Alterations in Mobility and Structural Integrity U 4

Study of needs and interactions with individuals in health care facilities who are experiencing health alterations in mobility and/or structural integrity. Baker and staff.

Au, Wi, Sp Qtrs. 2 cl, 8 clin hrs. Prereq: 307, 317, Anatomy 200, Physiol 312.

419 Nursing Process: Health Alterations in the Reproductive Process U 4

Study of needs and interactions with individuals in health care facilities who are experiencing health alterations in the reproductive process. Baker and staff.

Au, Wi, Sp Qtrs. 2 cl, 8 clin hrs. Prereq: 307, 317, Anatomy 200, Physiol 312.

505 Nursing Transactions with Patients and Families in Crisis U 8

Study and implementation of nursing transactions with patients experiencing acute episodic illness, psychological and physiological stress.

Au, Wi, Sp Qtrs. 4 cl, 16 hr lab. Prereq: Humn Ntr 310, Microbiol 509, Pharmacy 470 and all jr level nursing courses.

506 Nursing Transactions with Patients and Families in Recurring Crises U 8

Study and implementation of nursing transactions with patients and families experiencing long term

illness with the goal of reaching the individual's maximum potential.

Au, Wi, Sp Qtrs. 6 cl, 8-hr lab. Prereq: Humn Ntr 310, Microbiol 509, Pharmacy 470 and all jr level nursing courses.

507 Nursing Process with Groups of Patients U 8

Study and application of methodologies of organizing and delivering health care to groups of patients in complex health care systems.

Au, Wi, Sp Qtrs. 4 cl, 16 hrs lab. Prereq: Humn Ntr 310, Microbiol 509, Pharmacy 470 and all jr level nursing courses.

560 History, Trends, and Issues in Nursing U 4

Consideration of social, economic, and cultural forces influencing nursing education in the United States, 1870 to present with emphasis on 1930 to present; responsibilities and opportunities of the profession.

Wi, Sp Qtrs. 4 cl. Prereq: Humn Ntr 310, Microbiol 509, Pharmacy 470 and all jr level nursing courses.

593 Individual Studies U 1-8

Study of selected problems in nursing.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 16 cr hrs.

694 Group Studies in Nursing U G 2-5

Group studies of special problems in nursing; topics vary for quarters.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr nursing or grad student. Repeatable to a maximum of 15 cr hrs.

700 Interprofessional Education U G 3

Focus on ethical issues, changing professional/consumer rights, and interprofessional cooperation.

3 cl. Repeatable to a maximum of 6 cr hrs.

700.01 Care of Patient/Client

Treatment of the whole person through the analysis of the interrelated problems of actual patients/clients.

Wi Qtr.

700.02 Changing Societal Values

Identification and clarification of values considerations as they relate to professional problems in dealing with consumer/clients/patients.

Au Qtr.

700.03 Ethical Issues

Ethical issues of concern to the professions and arising out of the advanced technology: euthanasia, mind control, malpractice, social responsibility of the profession.

Sp Qtr.

753 Assessing the Performance of Nurses U G 3

Focus on strategies and modes of implementation of assessment of performance of nurses in clinical and non-clinical settings.

Sp Qtr. 2 cl, 1 hr arr. Prereq: Sr standing, or grad standing in School of Nursing, or permission of instructor.

793 Individual Studies in Nursing U G 1-5

Reading, conferences, and minor investigation by an individual student who wishes to study a particular nursing problem intensively.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

797 Interdepartmental Seminars U G 1-5

See Interdepartmental Seminars.

Au, Wi, Sp Qtrs. Repeatable by permission of School Secretary.

801 Concept and Theory Development G 3-6

Study of concept development and theories and their usefulness for nursing as a practice discipline.

Su, Au, Wi, Sp Qtrs. 3 cl. Repeatable to a maximum of 6 cr hrs.

802 Research in Nursing G 3

Research in nursing and its role in developing nursing; application in nursing of various methodologies and techniques and particular problems of design are considered.

Su, Au, Wi Qtrs. 1-3 cl, or up to 4 4-hr lab. Prereq: Course in basic statistical methods.

802.01 Non-Experimental Designs

Application in nursing of non-experimental approaches of research, pertinent data collection techniques and tools, problems most frequently encountered in designing and conducting non-experimental studies.

Su, Wi, Qtrs. 2 cl, 2 hr lab. Prereq or concur: Course in basic statistical methods.

802.02 Inquiry in Nursing

Components of fulfilling man's urge to explain including the scientific method and the ways of testing reality appropriate in the discipline of nursing.

Su, Au Qtrs. 2 cl, 1 hr arr. Prereq or concur: Statistics course and/or concurrent 801.

803 Nursing of Individuals G 3

Study of the common core of knowledge in nursing with respect to the personal systems of clients and health care workers; application of this knowledge through the human process.

Su, Au Qtrs. 3 cl. Prereq: Permission of instructor.

804 Nursing of Groups G 3

Study of common core of knowledge in nursing with respect to the interpersonal systems inherent in health care institutions; applications to human process.

Su, Wi Qtrs. 3 cl. Prereq: Permission of instructor.

805 Nursing Within Larger Social Systems G 3

Study of the common core of knowledge in nursing with respect to social systems as might be applied in health care systems.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

806 Nursing Practice Problems G 2-10

Studies of nursing care problems pertaining to a variety of client groups; may register for more than one section concurrently.

Su, Au, Wi, Sp Qtrs. 2 cl, lab arr. Prereq: Permission of instructor and current Ohio license; concur 801. Each decimal subdivision repeatable to 10 cr hrs.

806.01 Family Health Care

Study of the family and the role of the nurse with healthy families.

Prereq: Permission of instructor.

806.02 Children

Application of theoretical, conceptual, and affective components needed to conduct inquiry and to practice nursing with children (newborn to six years) and their families.

Prereq: Permission of instructor.

806.03 Schoolagers and Adolescents

Application of theoretical, conceptual, and affective components needed to conduct inquiry and to practice nursing with children (school age and adolescent) and their families.

Prereq: Permission of instructor.

806.04 Young and Middle Adults

Study of health problems of adults. Stevenson.

Prereq: Permission of instructor.

806.05 Late Adults

Study of health problems of the aged.

Prereq: Permission of instructor.

806.06 Acute Health Crises

Studies of crisis and crisis intervention with respect to the individual, group, and family organization with special emphasis on loss.

Prereq: Permission of instructor.

806.07 Chronic Health Problems

Studies of chronicity, disability, impairment, and rehabilitation in long-term problems.

Prereq: Permission of instructor.

806.08 Community Health Problems

Studies of community, community health problems, and nursing role in identifying and studying these problems.

Prereq or concur: 805 or permission of instructor.

860 Theoretical Bases for Leadership Roles in Nursing I G 3

A study of theoretical bases for administrative, teaching, and practice roles in Nursing.

Su, Au, Sp Qtrs. 3 cl hrs. Prereq or concur: 801.

861 Theoretical Bases for Leadership Roles in Nursing II G 3

A study of concepts basic to administrative, teaching, and practice roles in nursing.

Su, Wi Qtrs. 3 cl hrs. Prereq or concur: 801.

862 Practicum in Nursing G 10

Supervised experiences which permit in depth study of the roles and relationships in administration, practice, or teaching of nursing.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

862.01 Administration

Study of administrative position with opportunity to test theoretical knowledge in a health care system.

Su, Au Qtrs. 2 hr sem; field work.

862.02 Primary Care Practitioner

Supervised experiential component which permits in-depth study of the roles and relationships in the primary care area of practice.

Su, Au Qtrs. 2 2-hr cl, lab.

862.03 Acute Care Practitioner

Supervised experiential component which permits in-depth study of the roles and relationships in the acute care area of practice.

Su, Au Qtrs. 2 2-hr cl, lab.

862.04 Long-Term Care Practitioner

Supervised experiential component which permits in-depth study of the roles and relationships in the long-term area of practice.

Su, Au Qtrs. 2 2-hr cl, lab.

862.05 Teaching in a Baccalaureate Program in Nursing

Supervised experiential component of preparation to teach nursing in a baccalaureate program.

Su, Au, Sp Qtrs. 3 sem; field work.

862.06 Teaching in an Associate Degree Program in Nursing

A supervised experiential component of preparation to teach in a community college nursing program.

Su, Au, Sp Qtrs. 3 sem; field work.

880 Seminar G 2-5

Discussion of issues, trends, and problems in nursing; topics to be announced.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 30 cr hrs.

894 Group Studies in Nursing G 2-5

Reading and group conferences for graduate students who desire to study a particular trend in nursing or nursing education.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 5 cr hrs.

999 Research in Nursing G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

793 Individual Studies in Obstetrics and Gynecology P 6, 12 18 G 2-5

Clinical, laboratory, conference, and library work in obstetrics and/or gynecology.

1 month, offered all months (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Prereq: Permission of chairman.

Repeatable to a maximum of 18 cr hrs for professional credit.

793.01 Obstetric Specialties**793.02 Gynecologic Specialties****900 Obstetric and Gynecologic Pathology G 2-5**

Laboratory, conference, and library work; study of current pathological specimens with emphasis upon special investigation. Meiling, Hollenbeck, Holzaepfel, Williams, and Boutsellis.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 8 cr hrs.

999 Research in Obstetrics and Gynecology G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

Obstetrics and Gynecology

Office: N-645 University Hospital, 410 West 10th Avenue, 422-4861

737 Clinical Obstetrics and Gynecology P 6 or 12

Normal and abnormal obstetrics and diseases of the female generative tract; management and philosophy of current therapy; supervised inpatient and outpatient experience.

2 months, offered July, Sept, Nov, Jan, Mar, or May.

Prereq: Med 3rd yr standing. Must repeat to 12 cr hrs.

740 Fetus and Newborn P 6

Reproduction biology and human development; the fetal-maternal axis and the product of conception; supervised clinical training and service.

1 month, offered Aug, Dec, and May. Prereq:

Permission of instructor.

745 Reproduction Endocrinology and Infertility P 6

Selective endocrinologic aspects of the specialty; correlation of biochemical, histochemical and cytologic aspects with clinical problems.

1 month, offered Sept and Mar. Prereq: Permission of instructor.

751 Obstetric and Gynecologic Specialties P 6

Instruction in the newer and more advanced techniques of diagnosis in and therapy which would have been neither feasible nor possible on the wards nor in the clinics.

1 month, offered all months. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

751.01 Obstetric Specialties**751.02 Gynecologic Specialties**

Occupational Therapy

School of Allied Medical Professions

Office: 406 School of Allied Medical Professions Building, 1583 Perry Street, 422-5824

315 Theory and Scope of Occupational Therapy U 3

The scope of occupational therapy is presented with its theory base as well as its relation to education, medicine and community.

Au, Sp Qtrs. 3 cl. Prereq: Enrollment in School of Allied Medical Professions, Occupational Therapy Division. Not open to students with credit for 311, 312, and 313.

435 Functional Anatomy Inquiry U 4

A study of the neuromusculo-skeletal functions of the human body, recognition of selected pathological signs of motor dysfunction and their relevance to therapeutic procedure. Grant and Wade.

Au Qtr. 2 1-hr cl, 2 2-hr labs. Prereq: Enrollment in the School of Allied Medical Professions and concur: Anatomy 201. Not open to students with credit for Physter 482 and 495.

450 The Person I U 5

Basic information and application of experiential components relating to interpersonal relationships and communication, with emphasis on data collection and client evaluation procedures. Allen and clinical faculty.

Su, Au Qtrs. 2 1-hr cl, 6 clin hrs. Prereq or concur: 315.

451 The Person II U 5

Systematic observation, evaluation, and treatment plans for dysfunction described and explained in 661 or 663. Allen and clinical faculty.

Wi, Sp Qtrs. 2 1-hr cl, 6 clin hrs. Concur: 661, 663. Repeatable to a maximum of 10 cr hrs.

452 Interpersonal Dynamics and Processes U 3

The planning and application of group techniques in occupational therapy. Page.

Su Qtr. 1 2-hr cl, 1 2-hr lab. Concur: 315.

522 Studies in Psychopathology U 2

Examination of the psychological determinants of personality; the clinical, etiological and psychodynamic aspects of psychiatric disorders; current treatment approaches. Page, Stinson and staff of dept of psychiatry.

Wi Qtr. 1 cl, 2-hr lab. Prereq: 6 cr hrs of Psych 330, 331, 332, 333 or 530; 40 hrs psychiatric experience; permission of instructor.

540 Competency in Occupational Behavior U 3

A study of alternative occupational therapy approaches as they impact on health adjustment problems using the case study method. Grant and staff.

Au, Wi Qtrs. 1 3-hr cl, 1 2-hr lab. Prereq: 315; Soc 202; Allied Med 425 or written permission of instructor.

541 Dysfunction in Occupational Behavior U 3

An examination of the occupational therapist's role in reconstructing competent occupational behavior. Grant and Page.

Su, Sp Qtrs. 2 1½-hr cl. Prereq: 540, 685.

545 Allied Media Laboratory U 2

Application to treatment planning of the physical, psychological and cultural aspects of activities and their applications.

Su, Au, Wi, Sp Qtrs. 2 2-hr labs. Prereq: 450, 540. Repeatable to a maximum of 4 cr hrs.

560 Sensory-Integrative Function U 3

The role of the central nervous system in cognitive-perceptual-motor integration; a consideration of neural systems; sensory-integrative assessments. Grant, Land and Wade.

Sp Qtr. 3 1-hr cl. Prereq: Allied Med 425, Anatomy 200, Zoology 232 or equiv with written permission of instructor, enrollment in occ ther.

661 Therapeutic Intervention I U 5

The influence of activity on the integration of intellectual and affective response.

Sp Qtr. 2 cl, 2 3-hr lab. Prereq: 450, 452, 540; Psych 332.

662 Therapeutic Intervention II U 4

The influence of activity on the integration of cognitive-sensory-motor process.

Au Qtr. 2 cl, 2 2-hr lab. Prereq: 560.

663 Therapeutic Intervention III U 5

The influence of activity on the integration of motor response. Wade.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: 662, concur: 451.

664 Advanced Therapeutic Intervention U 5

Principles and methods of evaluation, treatment and prevention for advanced clinical students.

Sp, Su Qtrs. 2 cl, 2 3-hr lab. Prereq: 560, 661, 662, 663 or equiv with written permission of instructor. Repeatable to a maximum of 10 cr hrs; subdivisions not repeatable.

664.01 Psycho-Social Intervention**664.02 Sensory-Motor Intervention****664.03 Rehabilitation Technique****670 Research Problems in Occupational Therapy U 3**

An examination of selected research projects in occupational therapy and/or related areas as background for theory building, research design and implementation. Allen.

Au, Wi Qtrs. 3 cl. Prereq: 451.

675 Program Planning in Occupational Therapy U 3

A problem-solving approach to program planning within selected health, educational or social agencies. Grant.

Su, Sp Qtrs. 1 cl, lab arr. Prereq or concur: 644; or equiv with written permission of instructor.

685 Field Work in Occupational Therapy U 6

A practical experience in application of the principles and functions of occupational therapy in selected hospitals, health care facilities and community agencies.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: An average point-hour ratio of 2.25 in all professional courses and written permission of division director. Not open to students with maximum allowable credit for 630 or 685. Each subdivision repeatable to a maximum of 18 cr hrs.

685.01 Mental Health**685.02 Physical Function****685.03 Specialty Area****694 Group Studies U G 1-5**

Supervised group studies of special topics pertinent to the practice of occupational therapy.

Su, Au, Wi, Sp Qtrs. Open only to students enrolled in Occupational Therapy Division. Repeatable to a maximum of 15 cr hrs.

Ophthalmology

Office: 5024-B University Hospitals Clinic, 456 Clinic Drive, 422-5875

751 Group Studies in Ophthalmology P 1

Fundamentals of ophthalmology applicable in general practice and in other medical specialties. Makley.

1 month, offered Oct and Feb. Prereq: Enrollment in College of Medicine for a Doctor of Medicine degree.

793 Individual Studies in Ophthalmology P 6, 12, 18 G 1-5

Research in area of:

793.01 Ophthalmic Microbiology

793.02 Ophthalmic Immunology**793.03 Ophthalmic Pathology****793.04 Retinal Diseases**

1, 2 or 3 months; offered all months (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Prereq: Permission of chairman. Repeatable to a maximum of 18 cr hrs.

794 Group Studies in Ophthalmology P 6, 12, 18

Clinical experience in basic ophthalmology to include rotations through the outpatient service and eye ward, conferences, and rounds.

1 month, offered all months except July. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

850 Seminar in Ophthalmology G 3-5

Each student is responsible for presenting material at least twice a year; attendance at weekly Grand Round on the Ophthalmology service is included.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

999 Research in Ophthalmology G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

Optometry

Office: A 420 Starling-Loving, 338 West 10th Avenue, 422-2647

401 Survey of Optometry P 1

Development of optometry and optometric education; scope of optometric services; sources of vision information; kinds of current vision research.

Au Qtr. 1 cl. Prereq: Optomtry 1st yr standing.

411 Intermediate Geometric Optics P 3

Thick-lens optics; image evaluation; application to optometric systems.

Sp Qtr. 3 cl. Prereq: Optomtry 1st yr standing and Phys Opt 501.

431 Ophthalmic Optics I P 5

Ophthalmic optics of single-vision and multifocal spectacle lenses; measurement and inspection of spectacle lenses; manufacturing processes.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: Optomtry 2nd yr standing and 411.

432 Ophthalmic Optics II P 5

Ophthalmic lens design; minimizing lens aberrations; theory and practice in fitting and adjusting spectacles.

Sp Qtr. 4 cl, 1 2-hr lab. Prereq: 431.

433 Ophthalmic Optics III P 4

The optics of corneal and scleral contact lenses; laboratory exercises in inspecting, measuring, edging, surfacing, and modifying contact lenses.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 432.

441 Practical Optometry I P 4

Theory and techniques of keratometry, skiametry, objective and subjective tests of refraction, accommodation, and functions of the extra-ocular muscles.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: Optomtry 2nd yr standing.

442 Practical Optometry II P 4

Correlation and analysis of data; systematic determination of the etiology of anomalies and sources of visual discomfort and inefficiency; corrective procedures and prescription writing.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 441.

443 Practical Optometry III P 4

Ophthalmoscopy and examination of the external parts and the media of the eye; case histories; techniques of investigating special types of anomalies; corrective procedures.

Sp Qtr. 3 cl, 1-3 hr lab. Prereq: 442.

641 Clinical Practice in Optometry I P 5

Clinical practice in examining eyes and carrying out corrective procedures; the conference periods are devoted to the discussion of problems encountered during the clinic periods.

Su, Au, Wi, Sp Qtrs. 2 cl, 9 clinic hrs. Prereq: 443.

642 Clinical Practice in Optometry II P 5

Continuation of 641.

Su, Au, Wi, Sp Qtrs. 2 cl, 9 clinic hrs. Prereq: 641.

643 Clinical Practice in Optometry III P 5

Continuation of 642.

Su, Au, Wi, Sp Qtrs. 2 cl, 9 clinic hrs. Prereq: 642.

651 Orthoptics P 4

Definitions, characteristics, incidence, and phenomenology of visual problems producing loss or inefficiency of binocular vision; diagnosis, prognosis, and orthoptic treatment of such problems.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: Optomtry 3rd yr standing and 443.

652 Aniseikonia and Low Vision P 4

Etiology; clinical methods of evaluating aniseikonia and low vision; design of optical aids for such conditions; environmental aids and agencies available to the visually handicapped.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: Optomtry 3rd yr standing and 443.

653 Contact Lenses I P 4

The uses of contact lenses; theory and methods of fitting; specification and verification; post-fitting care; contact lens solutions.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: Optomtry 3rd yr standing and 443.

654 Contact Lenses II P 4

Theory and clinical methods involving meridional and bifocal contact lenses; fitting astigmatic corneas and aphakic eyes; haptic and keratoconic lenses; cosmetic shells and prosthetic eyes.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 653.

660 Ophthalmic Pathology P 5

Gross and microscopic pathology of the eye, including diseases of the conjunctiva, orbital cavity, and pertinent pathology of the central nervous system.

Au Qtr. 3 cl, 6 lab hrs. Prereq: Optomtry 2nd yr standing, Path 650.

701 Applied Pathology of the Eye I P 4

Advanced ophthalmoscopy, slit lamp microscopy, tonometry, and other methods of detecting pathological conditions; systematic study of ocular diseases; artificial eyes and other prosthetic devices.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 443 and Phys Opt 608.

702 Applied Pathology of the Eye II P 4

Motor disturbances of eyes, paralytic strabismus, peripheral fixation anomalies, nystagmus, ptosis, ptosis crutches, anomalous accommodative and pupillary responses.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 701.

703 Applied Pathology of the Eye III P 4

Visual fields; scotometry; subnormal central vision involving pathology; telescopic lenses and aids for subnormal vision; theory and practice in the use of contact lenses.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 702.

721 Optometric Economics and Jurisprudence P 3

Historical background; legal status; practice building techniques; office accounting and general practice management; representative organization in optometry; professional ethics.

Wi Qtr. 3 cl. Prereq: 643.

722 Civic and National Problems in Eye Care P 3

Number, distribution, supply interrelationships, and roles of the various ophthalmic groups; prevalence of visual anomalies; governmental and public-health aspects of vision care.

Sp Qtr. 3 cl. Prereq: 721.

741 Advanced Clinical Practice in Optometry I P 3

Advanced clinical practice; the conference periods are devoted to the discussion of problems and cases encountered during the clinic periods.

Au, Wi, Sp Qtrs. 2 cl, 3 clinic hrs. Prereq: 643.

742 Advanced Clinical Practice in Optometry II P 3

Continuation of 741.

Au, Wi, Sp Qtrs. 2 cl, 3 clinic hrs. Prereq: Optomtry 4th yr standing and 741.

743 Advanced Clinical Practice in Optometry III P 3

Continuation of 742.

Au, Wi, Sp Qtrs. 2 cl, 3 clinic hrs. Prereq: Optomtry 4th yr standing and 742.

745 Special Clinical Practice P 1-6

Clinical experience in specialized phases of optometric practice.

Su, Au, Wi, Sp Qtrs. 3-18 clinic hrs. Prereq: Optomtry 4th yr standing and course indicated in selected subdivision(s). Repeatable to a maximum of 30 cr hrs.

745.01 General Practice

Prereq: 643.

745.02 Contact Lenses

Prereq: 654.

745.03 Strabismus and Orthoptics

Prereq: 651.

745.04 Ocular Pathology

Prereq: 703.

745.05 Aniseikonia

Prereq: 652.

745.06 Low Vision

Prereq: 652.

745.07 Perceptual-Motor Problems

Prereq: 643.

780 Topics in Optometry P 1-5

Clinical and theoretical aspects of areas of current interest in optometry.

Su, Au, Wi, Sp Qtrs. Prereq: Enrollment in College of Optometry and permission of dean. Repeatable to a maximum of 30 cr hrs. Each subdivision repeatable to a maximum of 5 cr hrs.

780.01 General Optometry**780.02 Contact Lenses****780.03 Strabismus****780.04 Ocular Pathology****780.05 Aniseikonia****780.06 Low Vision****780.07 Visual Development****780.08 Visual Perception****780.09 Visual Performance****780.10 Environmental Vision****780.11 Pediatric Optometry****780.12 Geriatric Optometry****780.13 Ophthalmic Optics****780.14 Special Optical Design****780.15 Optometric Instrumentation****780.16 Public Health Optometry****780.17 Ocular Pharmacology****780.18 Microbiology of the Eye****780.19 Binocular Vision****780.20 Visual Problems of Minorities****780.21 Special**

Otolaryngology

Office: N-820 University Hospital, 410 West 10th Avenue, 422-5472

794 Group Studies in Otolaryngology P 6

Clinical application of the principles of otolaryngology with patients in clinic and operating room; at least one hour daily supervised teaching by staff members; instruction by slides, films, seminars, and personal supervision. Saunderson and staff.

1 month, offered all months except June. Prereq: Permission of instructor.

Pathology

Office: 4170 Graves Hall, 333 West 10th Avenue, 422-4471

501 Medical Technology U 3

Clinical hematology, including coagulation; urinalysis. Stevenson.

Su Qtr. 3 cl. Prereq: Admission to med tech or permission of instructor.

502 Medical Technology U 3

Clinical microbiology, including mycology. Ayers.

Au Qtr. 3 cl. Prereq: Admission to med tech or permission of instructor.

503 Medical Technology U 3

Immunology; immunohematology. Senhauser.

Wi Qtr. 3 cl. Prereq: Admission to med tech or permission of instructor.

504 Medical Technology U 5

Clinical blood and tissue chemistry; modes of investigating diseases by biochemical methods, and their interpretation.

Sp Qtr. 5 cl. Prereq: Admission to med tech or permission of instructor.

505 Fundamentals of Disease U 3

The nature of disease, mechanisms involved in the disease process, and use of the laboratory in defining the mechanisms of disease.

Au Qtr. 3 cl. Prereq: Admission to School of Allied Medical Professions or permission of instructor.

603 Clinical Pathology P 6 or G 4

A study of the changes in the blood, urine, feces, sputum, spinal fluid, and gastric contents brought about by disease.

Wi Qtr, 4 cl, 2 2-hr lab: P 6; Wi Qtr, 4 cl: G 4. Prereq: For professional credit, Med 2nd yr standing; for grad credit, permission of instructor.

640 Pathobiology P G 3

Seminars on topics in comparative cellular pathology.

Au Qtr. 3 cl. Prereq: Permission of instructor. Cross-listed in Vet Path.

650 Pathology P G 5

General pathology including the etiology of infectious disease, disturbances of nutrition, inflammation, and neoplasia, with special reference to the influence upon ophthalmic pathology; selected chapters of Special Pathology; histologic and gross demonstrations.

Au Qtr. 3 cl, 6 lab hrs. Prereq: Optomtry 2nd yr standing or permission of instructor.

655 General Pathology P 4

General pathology, including the etiology of diseases, disturbances of nutrition, inflammation, regeneration, and tumors.

Wi Qtr 3 cl, 2 3-hr lab. Prereq: Dent 2nd yr standing.

792 Special Lectures in Pathology P G 3

Lectures in special fields of pathology; one decimal subdivision will be offered each quarter.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Grad standing; enrollment in College of Medicine for Doctor of Medicine degree. Repeatable to a maximum of 24 cr hrs.

792.01 Blood and Bone Marrow

Pathology of the blood and bone marrow with emphasis on the laboratory diagnosis of anemia. Stevenson.

792.02 Lectures in Clinical Chemistry

The metabolic basis of disease, interpretation of laboratory data, and clinical laboratory methodology.

792.04 Neuropathology

Selected lectures on neuropathology. Liss.

792.05 Immunohematology

Diagnostic laboratory methods in immunohematology.

792.06 Exfoliative Cytology

Diagnostic exfoliative cytology including aspiration biopsy.

792.08 Cellular Pathology

Cellular pathology with emphasis on ultramicroscopic changes in cell injury.

792.11 Automation and Instrumentation in Clinical Chemistry

Advanced analytical technique as applied to clinical chemical problems. Discussion of spectrophotometric, electronanalytic, chromatographic and

other methods in the context of the clinical laboratory. Theory and application of automated analysis. Lott.

793 Individual Studies in Pathology P G 3-6, 12, 18

1, 2, or 3 months; offered all months. (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Prereq: Med Phase IV standing, or grad standing; permission of instructor. When registration is for 3 professional cr hrs, an additional 3 hr professional course must be taken. Each subdivision repeatable to 18 cr hrs.

793.01 Pathologic Anatomy

Baba.

793.02 Principles of Clinical Cytology**793.04 Clinical Chemistry****793.05 Neuropathology**

Liss.

793.06 Immunohematology**793.07 Clinical Microbiology**

Ayers.

793.08 Pediatric Pathology

Newton.

793.09 Surgical Pathology

Holaday.

793.11 Special topics in Pathologic Anatomy

Baba and Sharma.

793.12 Ultrastructure of Cells in Disease

Baba.

793.13 Laboratory Medicine—the Erythrocyte

Stevenson.

793.14 Problems in Experimental Pathology**793.15 Problems in Pathology and Clinical Pathology****850 Seminar in Pathology and Clinical Pathology G 2**

Discussion of pertinent literature, presentation and discussion of research work, and demonstration of fresh specimens and slides.

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Grad standing in path.

999 Research in Pathology G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Pediatrics

Offices: Children's Hospital, 700 Children's Drive and N-118 University Hospital, 410 West 10th Avenue, 422-7253

715 Clinical Pediatrics P 6 or 12

Didactic and clinical instruction in pediatrics; presentation of health care of sick and well children. 2 months. Prereq: Phase IV standing. Must repeat to 12 cr hrs.

793 Individual Studies in Pediatrics

Su, Au, Wi, Sp Qtrs (grad cr). 1, 2, 3, or 4 months (prof cr). Prereq: Permission of instructor.

793.01 Advanced Pediatrics P 6, 12, 18 G 1-5

Graham.

1, 2, 3, or 4 months; offered all months except June. Repeatable to a maximum of 24 cr hrs for professional credit.

793.02 Genetics P 6, 12, 18 G 1-5

Kontras and Sommer.

1, 2, or 3 months; offered all months. Repeatable to a maximum of 18 cr hrs for professional credit.

793.03 Infectious Diseases P 6, 12, 18 G 1-5

Haynes.

1, 2, 3, or 4 months; offered all months except Jan, Feb, and Mar. Repeatable to a maximum of 24 cr hrs for professional credit.

793.04 Pediatric Cardiology P 6, 12, 18 G 1-5

Hosier.

1, 2, or 3 months; offered all months except June and Dec. Repeatable to a maximum of 18 cr hrs for professional credit.

793.05 Child Development P 6, 12, 18 G 1-5

2, 3, or 4 months; offered all months except June. Repeatable to a maximum of 24 cr hrs for professional credit.

793.06 Blood Diseases of Infants and Children P 6 G 1-5

Newton.

1 month, offered all months except June.

793.07 Neonatal Research P 6, 12, 18

Cordero.

1, 2, 3, or 4 months; offered all months except June. Repeatable to a maximum of 24 cr hrs for professional credit.

793.08 Adolescent Medicine P 6, 12, 18 G 1-5

Foster.

1, 2, or 3 months; offered all months. Repeatable to a maximum of 18 cr hrs for professional credit.

793.09 Pediatric Endocrinology P 6, 12, 18 G 1-5

Sotos.

1-4 mos; offered all months except July and August. Repeatable to a maximum of 24 cr hrs for professional credit.

793.10 Pulmonary Diseases P 6, 12, 18 G 1-5

Young.

1, 2 or 3 months; offered all months except March and August. Repeatable to a maximum of 24 cr hrs for professional credit.

793.11 Handicapped Child P 6, 12, 18 G 1-5

Kontras.

1, 2 or 3 mos; offered all months except July and August.

793.12 Pediatric Practice P 6

Turner.

1 month, offered all months except June.

793.15 Newborn Care P 6, 12, 18

Cordero.

1, 2, 3 or 4 months; offered all months. Repeatable to a maximum of 24 cr hrs.

793.17 Ambulatory and Community Pediatrics P 3-6

Block.

Offered all months. Prereq: Permission of instructor and registered as a student in the College of Medicine. Repeatable to a maximum of 12 cr hrs.

793.18 Pediatric Neurology P 6-12

Sherard.

Offered all months except August. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

794 Group Studies in Pediatrics

Su, Au, Wi, Sp Qtrs. 1, 2, 3, or 4 months.

794.02 Ambulatory Pediatrics P 6, 12, 18

Foster.

1, 2, 3, or 4 months; offered all months except June. Prereq: Phase IV. Repeatable to a maximum of 24 cr hrs.

794.03 Inpatient Pediatrics P 6, 12, 18

Turner.

1, 2, 3, or 4 months; offered all months except June. Prereq: Phase IV. Repeatable to a maximum of 24 cr hrs.

794.04 Pediatric Cardiology P 6

Hosier.

1 month; offered all months except June and Dec. Prereq: Phase IV.

794.05 Pediatric Endocrinology and Metabolism P 6, 12, 18

Sotos.

1, 2, 3, or 4 months; offered all months except July and Aug. Prereq: Phase IV. Repeatable to a maximum of 24 cr hrs.

794.06 Pediatric Hematology P 6

Newton.

1 month; offered all months except June. Prereq: Phase IV.

794.07 Adolescent Medicine P 6, 12, 18

Foster.

1, 2, 3, or 4 months; offered all months. Prereq: Phase IV. Repeatable to a maximum of 24 cr hrs.

794.08 Rheumatology and Handicapped Child P 6,12,18

Bass.

1, 2, 3 or 4 months; offered all months. Prereq: Phase IV. Repeatable to a maximum of 24 cr hrs.

830 Pediatrics for Dental Graduates G 3

Part of the graduate program in pedodontics; includes general clinical pediatrics presented by lectures, clinical conferences, case presentations, and seminars.

2 months offered Mar and Apr. Prereq: Grad standing.

850 Seminar in Pediatrics G 3-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept chairman.

999 Research in Pediatrics G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

Pharmacology

Office: 5086 Graves Hall, 333 West 10th Avenue, 422-8608

400 Pharmacology for Circulation Technologists U 3

A survey of pharmacology emphasizing cardiovascular drugs and agents used in circulation technology and general surgery. Hollander and Tjioe.

3 cl. Prereq: Physiol 311 and 312. Open only to students registered in the School of Allied Medical Professions.

600 General Pharmacology U G 3

Introduction to the general principles of pharmacology, drug classification, and the sites and mechanisms of drug action. Hollander.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: Physchem 611, Physiol 601, or permission of instructor.

610 Toxicology and Drug Identification U G 3

The biochemical basis for the action of poisons and methods for the identification of drugs and their metabolites. Couri.

Wi Qtr. 1 cl, 2 3-hr lab. Prereq: 600.

700 Medical and Mammalian Pharmacology P G 4

General principles of pharmacology; drugs used for diagnosis, prevention or eradication of the cause of disease, including endocrine products and chemotherapeutic agents. Bianchine.

Wi Qtr. 4 cl. Prereq: 600 or permission of instructor.

701 Medical and Mammalian Pharmacology P G 5

Continuation of 700. Bianchine.

Sp Qtr. 4 cl, 3 lab hrs. Prereq: 700.

702 Practice of Pharmacology P G 5

Performance and application of specialized pharmacological techniques and methods in evaluation of pharmacodynamic and pharmacokinetic activity of chemical substances. Couri.

Sp Qtr. Prereq or concur: 701.

770 Clinical Pharmacology and Therapeutics P 3

Application of clinical pharmacologic principles to the treatment of disease states. Bianchine.

May. Prereq: Permission of instructor.

793 Individual Studies in Pharmacology P 6, 12, 18 G 3-15

Cardiac arrhythmias; digitalis pharmacodynamics; neuropharmacology; endocrine pharmacology; advanced cardiovascular pharmacology; autonomic pharmacology.

1, 2, 3, months; offered all months except June (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

797 Interdepartmental Seminar U P G 1-5

See Interdepartmental Seminars.

a—Neuroscience

Su, Au, Wi, Sp Qtrs.

820†* Autonomic Pharmacology G 3-15

Comprehensive review of drugs that mimic or affect the actions of autonomic neurones with emphasis on biochemical and cellular analysis of autonomic drug action.

Au Qtr. 2 cl, lab arr. Prereq: 701 or permission of instructor.

821†* Cardiovascular Pharmacology G 3-15

Modern concepts of the action of drugs on the heart and circulation.

Wi Qtr. 2 cl, lab arr. Prereq: 701 or permission of instructor. Not open to students with credit for 721.

822 Neuroendocrine Pharmacology G 3-15

Levels of interaction of the nervous and endocrine systems. Fertel.

Sp Qtr. 2 cl, lab arr. Prereq: 600 or 701.

823 Pharmacology Related to Anesthesia G 3-15

The pharmacodynamics of anesthetic agents and of other drugs which modify the state of surgical anesthesia.

Su Qtr. 2 cl, lab arr. Prereq: 701 or permission of instructor.

824* Psychopharmacology G 3

Psychotropic drug-induced changes in central nervous system activity in relation to the varieties of perceptual-behavioral interpretations of that activity by self-referential systems, i.e. men.

Wi Qtr. 2 cl arr. Prereq: 600, 701, or permission of instructor.

845 Bioelectric Potentials G 5-15

Methods of recording transmembrane potentials from cells; interpretation of cell potentials; effects of drugs on transmembrane potentials. Hollander.

Wi Qtr. 5 cl, lab arr. Prereq: Physiol 601, 602 or equiv or permission of instructor.

850 Seminar in Pharmacology G 2

Conferences on selected topics in pharmacology.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

851* Steroid Pharmacology G 3-15

Pharmacology of steroids which affect special tissues, organs, or systems.

Sp Qtr. 2 cl, lab arr. Prereq: 701 or permission of instructor.

852* Drug Metabolism G 3

Discussions of mechanisms of biotransformation of drugs by enzymes, pharmacologic characteristics of these systems, and techniques for the study of drug metabolism. Couri.

999 Research in Pharmacology G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Pharmacy

Office: 217 Lloyd M. Parks Hall, 500 West 12th Avenue, 422-2266.

The Division of instruction and the courses in the College of Pharmacy comprising these Divisions are listed below:

Administrative and Social Sciences in Pharmacy — 400, 511, 512, 520, 523, 524, 525, 614, 625, 693, 694, 695, 820, 825, 826, 827, 850, 894, 993, 999.

Clinical Pharmacy and Professional Practice — 415, 416, 515, 612, 616, 617, 618, 685, 686, 693, 694, 695, 705, 715, 717, 816, 817, 850, 894, 993, 999.

Medicinal Chemistry — 433, 434, 436, 440, 670, 673, 676, 679, 693, 737, 835, 836, 845, 846, 850, 894, 993, 999.

Pharmaceutics and Pharmaceutical Chemistry — 401, 402, 503, 504, 505, 507, 508, 601, 606, 693, 694, 695, 701, 702, 705, 710, 800, 802, 811, 812, 850, 894, 993, 999.

Pharmacognosy and Natural Products Chemistry — 435, 450, 451, 553, 577, 693, 694, 754, 789, 850, 851, 852, 855, 894, 993, 999.

Pharmacology — 200, 270, 470, 670, 673, 676, 677, 679, 680, 681, 693, 694, 775, 850, 870, 871, 872, 881, 894, 993, 999.

200 The Rational and Irrational Use of Drugs U 3

Survey of the fundamentals of drug action with special emphasis on drugs of abuse; discussion of medical, social, legal, and educational aspects of drug use. Gaginella, Gerald, and Uretsky.

Su, Au, Wi, Sp Qtrs. 3 cl. Not open for credit to students in the College of Pharmacy.

270 Introduction to Drug Action U 5

An introduction to drug action in the treatment of disease; commonly used and abused prescription and non-prescription products will be discussed. Gerald. Wi Qtr. 3 1½-hr cl. Prereq: Botany 111 or Zoology 111 or Zoology 201. Not open for credit to students in the College of Pharmacy or the School of Nursing.

400 Introduction to Pharmacy P 3

A survey of the profession of pharmacy dealing with pharmacy's place in the health care system, its history, educational requirements, organization, regulation, and current development. Rucker. Au Qtr. 4 cl.

401 Pharmaceutics I P 5

The application of physical chemical principles to pharmaceutics; a fundamental introduction to solid and liquid dosage forms. Sokoloski, Malspeis, Moyer, Notari and Reuning. Wi Qtr. 3 cl, 2 hrs rec, 13-hr lab. Prereq: Chem 242 and 246 or equiv.

402 Pharmaceutics II P 5

The application of physical chemical principles to pharmaceutics; properties of solutions of pharmaceutical and medicinal compounds. Sokoloski, Frank, and Moyer. Sp Qtr. 3 cl, 1 hr rec, 13-hr lab. Prereq: 401.

415 Introduction to Disease I P 3

A study of the nature and mechanisms of disease relative to the understanding of the action of drugs. Visconti and clinical staff. Wi Qtr. 3 cl. Prereq: Anatomy 200, Physiol 311; prereq or concur: Physiol 312.

416 Introduction to Disease II P 3

A continuation of 415. Visconti and clinical staff. Sp Qtr. 3 cl. Prereq: 415.

433 Medicinal Chemistry P 3

An introduction to the chemistry of biologically active organic compounds; discussion of the synthesis, chemical properties and stereochemistry of compounds in major therapeutic classes. Lewis, Miller, and Witiak. Wi, Sp Qtrs. 3 cl, 1 hr rec. Prereq: Chem 242 or equiv.

434 Introductory Pharmaceutical Analysis P 5

An introduction to the quantitative chemical analysis of pharmaceuticals. Olson. Au Qtr. 3 cl, 2 3-hr lab. Prereq: Chem. 242 and 246 or equiv.

435 Bio-Pharmacy P 5

A study of pharmaceutical agents important in biochemical processes. Doskotch, and Robertson. Sp Qtr. 4 cl, 1-hr rec, 13-hr lab. Prereq: Chem 242 and 246 or equiv.

436 Advanced Pharmaceutical Analysis P 3

An introduction to selected instrumental methods of pharmaceutical analysis. Olson. Wi Qtr. 1 cl, 2 3-hr lab. Prereq: 434 or equiv.

440 Advanced Medicinal Chemistry U P 1

The synthesis and mechanisms of reactions used in the synthesis of drugs will be discussed. Witiak. Au, Wi, Sp Qtrs. 1 cl. Prereq: 433 or Chemistry 253.

450 Pharmacognosy P 4

A study of the history, source, identification,

constituents, and medicinal preparations of some of the more important drugs of biological origin. Beal and Robertson.

Wi Qtr. 4 cl. Prereq: Chem 242 and 246 or equiv.

451 Pharmacognosy P 5

A continuation of 450. Robertson, Beal, and Doskotch. Au Qtr. 5 cl, 1 3-hr lab. Prereq: Chem 242 and 246 or equiv.

470 Pharmacology for Nurses P 4

A survey of the important drugs used in medicine and a consideration of their therapeutic applications. Rahwan and Gaginella.

Au, Sp Qtrs. 4 cl. Prereq: Chem 102 or 122, and Physiol 312. Open only to students registered in School of Nursing.

503 Pharmaceutics III P 5

The application of physical chemical principles to pharmaceutics; solubility and mixed solvents, complexation, redox systems in pharmacy. Frank, Moyer, and Staubus.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 402.

504 Pharmaceutics IV P 5

The application of physical chemical principles to pharmaceutics; heterogeneous systems, emulsions, suspensions, gels, and magmas. Staubus and Notari.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 503.

505 Pharmaceutics V P 5

The formulation of compounded prescriptions and other dosage forms, with emphasis on drug availability, physiological requirements, incompatibility, prediction of stability and clinical effectiveness. Notari and Staubus.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 504.

507 Manufacturing Pharmacy P 3

Formulation and mechanical fabrication of a wide variety of pharmaceutical dosage forms. Frank.

Wi Qtr. 1 cl, 2 3-hr lab. Prereq: 402.

508 Manufacturing Pharmacy P 3

A continuation of 507. Frank.

Sp Qtr. 1 cl, 2 3-hr lab. Prereq: 402.

511 History of Pharmacy I P 2

A course designed to give the pharmacy student a deeper appreciation of the background of pharmacy and its development through the years. Buerki.

Au Qtr. 2 cl. Prereq: 400.

512 History of Pharmacy II P 2

A continuation of 511; emphasis on the development of the profession of pharmacy in Great Britain and the United States. Buerki.

Wi Qtr. 2 cl. Prereq: 400.

515 Hospital Pharmacy P 5

Introduction to and clinical experience in hospital pharmacy under the supervision of a registered pharmacist in University Hospital or Grant Hospital. Schneider and Latiolas.

Au, Wi, Sp Qtrs. 1 cl, 12 lab hrs. Prereq: 402. Open only to juniors and seniors.

520 Pharmaceutical Marketing P 4

A study of the pharmaceutical industry and the distribution of drug products and pharmaceutical services. Pathak.

Wi Qtr. 3 75-min cl. Prereq: Econ 200.

523 Pharmaceutical Record Keeping, Information Systems, and Control P 3

The interpretation and application of accounting and professional records for effective management control of pharmacy practice; lectures supplemented with case studies. Berger.

Au Qtr. 3 cl. Prereq: Econ 200.

524 Pharmacy Management P 4

A study of fundamental problems associated with planning, organizing, and controlling a community pharmacy emphasizing case problems to illustrate the practical application of management principles. Pathak.

Wi Qtr 3 cl, 1 2-hr lab. Prereq: 520, and 523 or Accting 201.

525 Pharmacy Management P 3

A study of ownership principles for beginning or acquiring a retail pharmacy. Techniques of organization, locating, staffing and designing the firm. Pathak.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: 524.

553 Microscopical Pharmacognosy P 3

Principles of the microscope and the application of microchemical and specialized techniques in the detection, separation, and identification of drugs. Beal.

Wi, Sp Qtrs. 3 2-hr lab. Prereq: 451 or equiv.

577 Biological Products P 3

USP standards and legal requirements governing manufacture, standardization, storage and distribution of toxins, antitoxins, serums, and vaccines. Beal and Robertson.

Sp Qtr. 3 cl. Prereq: Microbiol 509.

601 Cosmetology P 3

A study of the physical, chemical and physiological aspects of materials and products comprising the area of cosmetics with particular emphasis on allergenic properties and formulation. Frank and Sokoloski.

Sp Qtr. 1 cl, 2 2-hr lab. Prereq: Sr standing or permission of instructor.

606 Pharmaceutics VI P 5

A continuation of 505 with emphasis on the physical chemical properties of drugs and dosage forms and the nature and intensity of biological action. Reuning, Kates, Moyer, Notari, and Staubus.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 505.

612 Appliances and Prescription Accessories P 1

Study of conditions requiring a series of orthopedic and surgical appliances, invalid aids and prescription accessories.

Sp Qtr. 1 2-hr cl. Prereq: 679.

614 Professional Ethics P 2

The conceptual basis and content of pharmaceutical ethics; significance of codified ethics, interprofessionally considered; differences of view underlying ethical issues; methods of encouraging compliance. Buerki.

Sp Qtr. 1 2-hr cl. Prereq: 512 or permission of instructor.

615 Sterile Products P G 3

Formulation, preparation, and testing of sterile products including injections, bulk solutions, and nasal and ophthalmic preparations. Stach.

Wi Qtr. 2 cl, 1 3-hr lab. Prereq: 504 or equiv.

616 Medical Applications of Radionuclides and Radiopharmaceuticals P G 3

A study of the theoretical and clinical aspects of the preparation, use, control and handling of radionuclides and radiopharmaceuticals used in medicine. Scheu.

Wi Qtr. 3 cl. Open to students with jr standing in College of Pharmacy or School of Allied Medical Professions.

617 Applied Pharmacotherapeutics I P 4

Integration of the student's knowledge of pharmaceutics, pharmacology and pathology into an understanding of the sick patient, and the rationale of the drug therapy. Visconti and clinical staff.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 606 and 679.

618 Applied Pharmacotherapeutics II P 4

A continuation of 617. Visconti and clinical staff.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: 617.

625 Pharmaceutical Jurisprudence P 3

A study of the laws and regulations relating to the practice of pharmacy with emphasis on cases and court decisions illustrating the pharmacist's responsibilities.

Wi Qtr. 3 cl.

670 Chemical Pharmacology I P G 6

An interdisciplinary approach to the fundamental chemical and pharmacological principles of drugs relative to their biochemomorphology, absorption, metabolic fate, pharmacodynamics and therapeutic applications. Patil, Uretsky, and Miller.

Au Qtr. 5 cl, 1 3-hr lab. Prereq: 416, 433, and 435.

673 Chemical Pharmacology II P G 6

A continuation of 617. Gerald, Feller and Lewis.

Wi Qtr. 5 cl, 1 3-hr lab. Prereq: 670.

676 Chemical Pharmacology III P G 6

A continuation of 673. Burkman, Lewis, Miller, and Witiak.

Sp Qtr. 5 cl, 1 3-hr lab. Prereq: 673.

677 Toxicology U P G 3

Fundamentals of modern and environmental toxicology with emphasis on preclinical and clinical testing of new drugs, principles of teratology, carcinogenicity and Mutagenicity, and drug interactions. Rahwan.

Wi Qtr. 3 cl. Prereq: 676 or permission of instructor.

679 Chemical Pharmacology IV P G 6

A continuation of 676. Rahwan, Burkman, Feller, Gaginella, Lewis, Miller, and Witiak.

Au Qtr. 5 cl, 1 3-hr lab. Prereq: 676.

680 Pharmacology of Newer Products P 3

Pharmacology of the more recent drugs and preparations and their therapeutic application.

Sp Qtr. 3 cl. Prereq: 679.

681 Ocular Pharmacology P 3

A survey of the general principles of drug action and the properties of drugs affecting ocular structure and function. Burkman and Patil.

Sp Qtr. 3 cl. Prereq: 3rd yr standing in optomtry. Open only to students registered in College of Optometry.

685 Community Practice Externship P 5

Application of training to community pharmacy practice while under the supervision of both college and pharmacist.

Au, Wi, Sp Qtrs. 1 2-hr cl, 1 2-hr lab, 16 hrs practicum. Prereq: 520; prereq or concur: 606 and 679.

686 Institutional Practice Externship P 5

Application of training to institutional pharmacy practice while under the supervision of both college and pharmacist.

Au, Wi, Sp Qtrs. 1 2-hr cl, 1 2-hr lab, 16 hrs practicum. Prereq: 520; prereq or concur: 606 and 679.

693 Individual Studies in the Pharmaceutical Sciences P 1-5

Laboratory and library work designed to give the qualified student an opportunity to complete an original investigation or pursue an interest in a special problem.

Su, Au, Wi, Sp Qtrs. Prereq: Jr standing, cumulative point-hour ratio of 2.5, and permission of instructor. Repeatable to a maximum of 30 cr hrs.

694 Group Studies in Pharmacy P 1-5

Group studies of selected topics in various fields of pharmacy.

Su, Au, Wi, Sp Qtrs. 1-5 cl. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

695 Seminar P 2

Problems arising out of professional relations of the pharmacist with the physician, medical interns, nurses, laboratory technicians, and the laity.

Au, Wi, Sp Qtrs. 2 cl. Prereq: Sr standing or permission of instructor. Repeatable to a maximum of 6 cr hrs.

700 Radioisotope Tracer Techniques and Radiopharmaceuticals P G 5

A survey of the properties of radioisotopes and radiation; radioisotope tracer methods and applications to pharmaceutical sciences; the preparation, standardization, and handling of radiopharmaceuticals. Malspeis and Feller.

Au Qtr. 3 cl, 2 3-hr lab. Prereq: Permission of instructor.

702 Concepts of Pharmaceutical Research II P G 3

Presentation of some basic principles and techniques used in pharmaceutical research and product development: interfacial phenomena and drug solutions. Frank and Malspeis.

Sp Qtr. 3 cl. Prereq: 505 or equiv with written permission of instructor.

705 Individualization of Drug Dosage P G 3

A problem-oriented course designed to provide experience in recognition and solving of patient cases where drug dosage regimen must be modified to optimize therapy. Reuning and Visconti.

Wi, Sp Qtrs. 3 cl. Prereq: 606, and 676 or permission of instructor. Repeatable to a maximum of 6 cr hrs.

710 Biopharmaceutics P G 3

Interrelationships of absorption, distribution, metabolism, storage, and excretion of drugs with the physical-chemical and biological properties of body tissues, drugs and drug dosage forms. Reuning and Notari.

Wi Qtr. 3 cl. Prereq: Sr standing or permission of instructor.

715 Hospital Pharmacy and the Hospital Organization G 3

Hospital organization and the relationship of the departmental components to the pharmacy. Latiolais and Nold.

Au Qtr. 3 cl. Prereq: Grad standing.

717 Drug Therapy in Clinical Practice P G 5

A clinical program involving didactic, seminar, and clinical instruction in patient drug therapy using facilities of University, Children's, Grant, and Riverside Hospitals. Visconti and clinical staff.

Au, Wi, Sp Qtrs. 1 cl, 12 lab hrs. Prereq: 676 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

737 Advanced Pharmaceutical Analysis P G 5

The use of specialized instruments in the assay and control methods of drugs and drug preparations. Olson.

Sp Qtr. 3 cl, 2 3-hr lab. Prereq: 436 or permission of instructor.

754 Microscopical Pharmacognosy P G 3

Pharmaceutical applications of specialized microscopic instruments. Beal.

Sp Qtr. 1 cl, 2 2-hr lab. Prereq: 553 or equiv.

775 Cellular Pharmacology G 3

Cellular mechanisms of drug action as they relate to chemical structure, with discussion of methods of investigating such mechanisms. Rahwan.

Au Qtr. 3 cl, arr. Prereq: Grad standing in pharmacology, medicinal chemistry, or other biological discipline; Pharmacy 433 and 435; Physiology 311 and 312 or equiv desirable with written permission of instructor.

789 Isolation Techniques in Research P G 5

A study and application of selected isolation techniques for the purification of natural products or other organic mixtures. Doskotch.

Wi Qtr. 3 cl, 2 3-hr lab. Prereq: Chem 242 and 246 or equiv or permission of instructor.

800 Concepts of Pharmaceutical Research I G 3

Presentation of some basic principles and techniques used in pharmaceutical research and product development: drug stabilization, solubilization, complexation, and macromolecule interactions. Notari and Sokoloski.

Au Qtr. 3 cl. Prereq: 505 or equiv with written permission of instructor.

802 Pharmacokinetics G 4

The analysis of the absorption, distribution and elimination of drugs, and the mathematical characterization of these processes, with emphasis on theory and application. Kates and Staubus.

Sp Qtr. 2 2-hr cl. Prereq: 679 or equiv with written permission of instructor; Math 152 or equiv with written permission of instructor.

811 Advanced Pharmacy G 3

A study of the application of physical chemical principles to the design and development of fluid pharmaceutical dosage forms. Frank, Malspeis, Notari, Reuning, Sokoloski, and Staubus.

Wi Qtr. 3 cl. Prereq: Chem 521 or 533, and permission of instructor.

812 Advanced Pharmacy G 3

A study of the methods used to predict, determine, and improve the stability characteristics of medicinal agents in dosage form. Frank, Malspeis, Notari, Reuning, Sokoloski and Staubus.

Sp Qtr. 3 cl. Prereq: Chem 521 or 533, and permission of instructor.

816 Principles of Hospital Pharmacy G 3

Administrative and professional principles and concepts of, and trends affecting, hospital pharmacy. Latiolais and Nold.

Au Qtr. 3 cl. Prereq: 715.

817 Principles of Hospital Pharmacy G 3

A continuation of 816. Latiolais and Nold.

Sp Qtr. 3 cl. Prereq: 816.

820 Social Aspects of Drug Use G 3

A study of the social aspects of drug use with emphasis on reviewing pertinent research and developing new research approaches to existing problems. Rucker.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

825 Advanced Pharmaceutical Marketing G 3

Theoretical aspects of drug marketing with emphasis on policies and practices of the pharmaceutical manufacturer. Pathak.

Wi Qtr. 3 cl. Prereq: 520, and Bus-Mkt 650 or equiv.

826 Advanced Pharmacy Administration G 3

Investigation and analysis of selected areas of pharmacy administration for group discussion and written report: case problems, review of current literature, and research. Rucker and Pathak.

Su, Au Qtr. 3 cl. Prereq: 825 and Bus-Mgt 500 or equiv. Repeatable to a maximum of 6 cr hrs.

827 Principles of Drug Insurance Design G 3

Administrative, economic, medical, political and therapeutic factors governing the construction and implementation of a large prescription drug insurance program. Rucker.

Sp Qtr. 3 cl.

835 Advanced Medicinal Chemistry G 3

Chemistry of autonomic receptor sites; recent literature references on the biological, chemical, and stereochemical requirements for adrenergic and cholinergic stimulation and blockade. Lewis, Miller, and Witak.

Wi Qtr. 3 cl. Prereq: 679 or equiv, and Chem 833, or permission of instructor.

836 Advanced Medicinal Chemistry G 3

Selected topics in medicinal chemistry, the subject matter being drawn from the current literature. Lewis, Miller, and Witak.

Sp Qtr. 3 cl. Prereq: 679 or equiv, and Chem 833, or permission.

845 Advanced Medicinal Chemistry G 3

Concepts of conformational analysis; recent selected literature references on the subject; the application of this science to the design and synthesis of biologically active molecules. Lewis, Miller, and Witak.

Wi Qtr. 3 cl. Prereq: 679 or equiv, and Chem 833, or permission of instructor.

846 Advanced Medicinal Chemistry G 3

Synthesis of selected natural products; course content to change every two years; topic examples: steroids, alkaloids, heterocyclic compounds, tropolones and aromatic systems, vitamins, etc. Lewis, Miller, and Witak.

Au Qtr. 3 cl. Prereq: Chem 833.

850 Seminar G 1

Round-table discussion, oral and written reports dealing with recent advances in the pharmaceutical sciences.

Au, Wi, Sp Qtrs. 1 cl. Repeatable to a maximum of 30 cr hrs.

851 Advanced Pharmacognosy G 3

A study of research involving biosynthesis of plant constituents of pharmaceutical interest. Daskotch and Robertson.

Au Qtr. 3 cl. Prereq: Biochem 707 or Botany 631 or permission of instructor.

852 Medicinal Plant Propagation and Cultivation G 3

A study of the methods employed and problems involved in the propagation, cultivation, harvesting, and evaluation of medicinal plants. Beal.

Su Qtr. 3 cl. Prereq: Botany 631 or permission of instructor.

Drug Metabolism

See Pharmacol 852—Discussions of mechanisms of biotransformation of drugs by enzymes, pharmacologic characteristics of these systems, and techniques for the study of drug metabolism.

Offered in cooperation with Pharmacol.

855 Plant Drug Constituents G 3

A study of the more important classes of constituents obtained from plants, including methods of isolation, purification, and identification. Beal, Daskotch, and Robertson.

Wi Qtr. 2 cl, 1 3-hr lab. Prereq: Permission of instructor.

870 Theories in Pharmacology G 3

Orientation to graduate pharmacology; an introduction into theories of pharmacology and the research approach in pharmacology. Burkman.

Au Qtr. 3 cl. Prereq: 679 or equiv.

871 Screening Methods in Pharmacology G 3

Qualitative pharmacology covering the standard laboratory procedures and methods used in routine screening and laboratory evaluation of new drugs. Patil.

Wi Qtr. 1 cl, 2 3-hr lab. Prereq: 870 or equiv, Genetics 650 or equiv, and permission of instructor.

872 Advanced Methods in Pharmacology G 3

Theory and techniques involving spinal cat, tissue denervation, perfused heart aortic strips, calculation of pA_2 and pD_2 , receptor protection experiments; biogenic amine fluorescence microscopy, etc. Patil and Feller.

Sp Qtr. 1 cl, 2 3-hr lab. Prereq: 871 and permission of instructor.

881 Advanced Topics in Pharmacology G 3

A study of current advance theories of pharmacodynamics. Feller and Gerald.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 871 and permission of instructor. Repeatable to a maximum of 9 cr hrs.

894 Group Studies in Pharmaceutical Sciences G 1-5

Group studies of selected topics in various fields of the pharmaceutical sciences.

Su, Au, Wi, Sp Qtrs. 1-5 cl, opt lab. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

993 Individual Studies in the Pharmaceutical Sciences G 1-5

Individual investigation of problems in one of the areas below:

- a—Administrative and Social Sciences in Pharmacy
- b—Clinical Pharmacy and Professional Practice
- c—Medicinal Chemistry
- d—Pharmaceutics and Pharmaceutical Chemistry
- e—Pharmacognosy and Natural Products Chemistry
- f—Pharmacology

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 30 cr hrs.

999 Research in the Pharmaceutical Sciences G Arr

Research for thesis or dissertation purposes only.
Su, Au, Wi, Sp Qtrs.

⑤ 247 Philos 255 Intro to Philosophy Sci
A survey of the main philosophical problems relating to natural sciences
5 hrs math & logic
5 hrs nat sci
or permission

Philosophy

Office: 350 University Hall, 230 North Oval Mall,
422-7914

101 Introduction to Philosophy U 5

Examination of major problems, such as the nature of reality, knowledge, truth, morality, and of the relation of philosophy to science and religion.

Su, Au, Wi, Sp Qtrs. H101 (honors) may be available to students enrolled in an honors program or by permission of dept. Not open to students with credit for 100.

130 Introduction to Ethics U 5

The nature of right and wrong, good and evil; the grounds of moral choice and decision; the resolution of moral conflicts.

Su, Au, Wi, Sp Qtrs. H130 (honors) may be available to students enrolled in an honors program or by permission of dept.

150 Introduction to Logic U 5

Deduction and induction: principles of clear statement and valid reasoning; fallacies; and the methods by which theories and laws are established.

Su, Au, Wi, Sp Qtrs. H150 (honors) may be available to students enrolled in an honors program or by permission of dept.

210 Philosophical Bases of Western Culture U 5

Major themes in philosophy in the context of the development of western culture.

Sp Qtr. Prereq: Sophomore standing.

215 Asian Philosophies U 5

A survey including at least three of the following major philosophical systems of Asia: Hinduism, Buddhism, Jainism, Zoroastrianism, Taoism, and Confucianism.

Wi Qtr. 5 cl.

217 Fundamental Concepts of Existentialism U 5

Key concepts of the movement: commitment, absurdity, freedom, and death, as expressed in the works of Nietzsche, Sartre, Camus, et al.

Au Qtr. 5 cl. Not open to students with credit for 617.

230 Political and Social Philosophy U 5

Philosophical bases of social and political institutions and practices; analysis of such fundamental conceptions as rights, justice, equality, political obligation, and civil disobedience.

Au, Wi, Sp Qtrs.

240 Esthetics U 5

Principal systems of esthetics; interpretation of the creative activity of the artist, the work of art, and the contemplation and criticism of art objects.

Au, Wi, Sp Qtrs.

250 Symbolic Logic U 5

A formal presentation of the elements of modern and classical deductive logic; decision and proof procedures in sentential logic, functional logic, and Aristotelian logic.

Au, Wi, Sp Qtrs.

260* Introduction to Jewish Philosophy I U 3

Jewish thought in antiquity and the middle ages; emphasis on Philo, Saadia, Judah Halevi, and Maimonides in the context of their Greek and Arabic background.

Au Qtr. 3 cl. Not open to students with credit for 560.

261* Introduction to Jewish Philosophy II U 3

Modern Jewish thought, viewed against the background of late medieval and contemporary philosophical movements; emphasis on Moses Mendelssohn, Hermann Cohen, Franz Rosenzweig, and Martin Buber.

Au Qtr. Not open to students with credit for 561.

262 Introduction to Islamic Philosophy U 3

Readings in translation of such major authors as al-Kindi, al-Ghazzali, al-Farabi, Avicenna, and Averroes, with emphasis upon the Greek and Islamic components of their work.

Wi Qtr.

270 Introduction to Philosophy of Religion U 3

A philosophical analysis of the nature of religion and the foundations of religious belief.

Su, Au Qtrs. Not open to students with credit for 170.

H276 Freshman-Sophomore Proseminar U 5

Topic varies; emphasis on current philosophical problems.

Wi, Sp Qtrs. Prereq: Freshman-sophomore standing, and either 3.0 accum, enrollment in an honors program, or permission of instructor. Not open to students with credit for H570.

294 Group Studies U 3-5

Groups of students are given an opportunity to pursue special topics not otherwise offered.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

511 History of Ancient and Hellenistic Philosophy U G 5

Au Qtr.

512 History of Philosophy from Bacon to Hume U G 5

Wi Qtr.

513 History of Philosophy from Kant through the 19th Century U G 5

Sp Qtr.

518 Movements in Twentieth Century Philosophy U 5

Three or more of the following Anglo-American and European philosophical movements will typically be surveyed: existentialism, philosophical analysis, positivism, marxism, pragmatism, linguistic philosophy.

Au Qtr. 5 cl. Not open to students with credit for 611.

520* American Philosophy U G 3

The development of American philosophy: puritanism, deism, transcendentalism, and pragmatism.

Sp Qtr. Not open to students with credit for 613.

525 Russian Philosophy U G 3

Selected topics in the history of Russian philosophy: Western influences; slavophilism and Russian religious thought; philosophy of Dostoyevsky and Tolstoy; Russian emigre philosophy.

Au Qtr. Prereq: 1 course in the history of philos, permission of instructor.

H570 Junior-Senior Proseminar U G 3-5

Topics vary; emphasis on recent philosophical writing in some specific area or on some specific problem.

Au, Wi, Sp Qtrs. Prereq: 11 hrs in philos, and either 3.25 or better cumulative point-hour ratio with 3.5 or better in philos, or permission of instructor. Repeatable to a maximum of 10 cr hrs.

General Prerequisites for Courses Numbered 600 and 700

Not open to freshmen or sophomores. Unless otherwise indicated the prerequisites for 600 and 700-level courses are 10 hours in philosophy.

614 Medieval Philosophy U G 5

An examination of the main trends in the thought of the Middle Ages, based on a study of characteristic works of some of the most important medieval philosophers.

Wi Qtr. Prereq: 10 cr hrs in philos including 511, or 712 and 713. Not open to students with credit for 714.

615* Pragmatism U G 5

An examination of the main themes of pragmatism: pragmatic theories of truth, reality, nature of physical objects, knowledge of reality, and normative matters.

Au Qtr.

617 Existentialism U G 5

Introduction to the major doctrines of existentialism through writings of representative existentialists, such as Kierkegaard, Sartre, Jaspers, and Heidegger.

Sp Qtr.

618* Topics in Islamic Philosophy U G 5

Major themes in Islamic philosophy, their Greek and Muslim sources, and their relations to medieval Jewish and Scholastic philosophy; topics vary from quarter to quarter.

Wi Qtr. Prereq: 262 or equiv with written permission of instructor. Repeatable to a maximum of 15 cr hrs.

620* Philosophy of Maimonides U G 3

An intensive study of the structure and argument of Maimonides' *Guide of the Perplexed*; relevant materials from his other writings will also be examined.

Sp Qtr.

621* Topics in Jewish Philosophy U G 5

The thought of a particular author or school of Jewish

philosophy, e.g., Aristotelian, Neoplatonist, or Averroist; topics vary from quarter to quarter.

Wi Qtr. Prereq: 260 or 261, or equiv with written permission of instructor. Repeatable to a maximum of 15 cr hrs.

625 Marxist Philosophy U G 3

Classical (traditional) Marxism; dialectical materialism as elaborated in the USSR; recent development in humanistic Marxism deriving from Marx's early philosophical writings.

Wi Qtr. Prereq: 1 course in the history of philos or permission of instructor.

630 Advanced Political and Social Philosophy U G 5

An intensive examination of issues in political and social philosophy, including democracy, civil disobedience, anarchism, totalitarianism, nature of the state, etc.

Sp Qtr. Prereq: 230 or permission of instructor.

631 Advanced Ethical Theory U G 5

An intensive examination of representative ethical systems such as egoism, hedonism, intuitionism, and utilitarianism.

Wi Qtr. Prereq: 130

641† Advanced Esthetic Theory U G 5

Selected issues in philosophy of art, e.g., truth in art, the function of criticism; concentrated study of problems dealing with a particular genre.

Wi Qtr.

650 Advanced Symbolic Logic U G 5

Advanced techniques in functional logic and proof procedures; the axiomatization of sentential logic and the lower functional calculus; introduction to the higher functional calculus.

Wi Qtr. Prereq: 250.

652* Nonclassical Logic U G 5

Philosophical study of selected systems of nonclassical logic, such as entailment systems, modal, many valued epistemic, deontic imperative erotetic, tense, and free logics.

Wi Qtr. Prereq: 650. Repeatable to a maximum of 10 cr hrs.

653 Inductive Logic and Probability U G 5

Analysis of types of empirical inference; natural law and confirmation theory; calculus and nature of probability; philosophic presuppositions of inductive inference.

Sp Qtr. Prereq: 150 or permission of instructor.

660 Theory of Knowledge I U G 5

A survey of major epistemological problems: the possibility, origin, foundation, structure, methods, limits, types, and validity of knowledge.

Au Qtr. Prereq: 250 or permission of instructor.

663 Metaphysics I U G 5

A survey of major metaphysical problems: categories, universals, substance and process, causality and law, space and time, metaphysical presuppositions of knowledge.

Sp Qtr. Prereq: 250 or permission of instructor.

668 Philosophy of Law U G 5

An examination of the nature and function of law and of such problems as the relation of law to morality and the justification of punishment.

Au Qtr. 3 cl.

671* Philosophy of History U G 3

An essay of representative speculative theories of history; analysis of critical problems arising in the pursuit of historical knowledge.
Sp Qtr.

672 Philosophy in Literature U G 5

Philosophical problems as reflected in classics of literature, such as the Greek dramatists, Shakespeare, Voltaire, T. S. Eliot, Proust, and Tolstoy.
Au Qtr.

673 Philosophy of Language U G 5

Semantics and language analysis; functions of language; modes of meaning, relation of linguistic structure to metaphysics.

Au Qtr. Prereq: 150, or permission of instructor.

674 Philosophy of Logic and Mathematics U G 5

Analysis of basic concepts used in logic and in philosophical claims about logic and mathematics, such as: proposition, logical truth, mathematical objects, and necessity.

Wi Qtr. Prereq: 651.

675* Philosophy of Religion U G 5

A study of religious concepts and problems; the idea and nature of God, of man, their relation to the world and human destiny.

Wi Qtr.

676 Philosophy of Science U G 3

A study of the nature and structure of scientific concepts, laws, and theories; appraisal of methodologies, presuppositions, and frames of reference in science.

Au Qtr.

677 Conceptions and Methods of the Social Sciences U G 3

Philosophic assumptions of social science: nature of explanation (methodological individualism, holism, functionalism); methods in natural and behavioral science; fact and value in social inquiry.

Wi Qtr.

680 Studies in the History of Philosophy and of Scientific Theories U G 5

The relations between philosophy and the sciences in different historical periods and with respect to different subject matters; topics vary from quarter to quarter.

Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

693 Individual Studies U G 2-10

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept chairman. Students ordinarily earn from 2 to 5 cr hrs, but Honors students may earn up to 10 cr hrs.

694 Group Studies U G 2-15

Au, Wi, Sp Qtrs. Prereq: Permission of chairman. Repeatable to a maximum of 30 cr hrs.

701 Studies in Medieval Philosophy U G 5

An intensive examination of a major philosopher or philosophical problem of the period; topics vary from quarter to quarter.

Wi Qtr. Prereq: 10 cr hrs in philos including 511 or 614; or equiv with written permission of instructor. Repeatable to a maximum of 15 cr hrs.

702 Studies in Seventeenth Century Philosophy U G 5

An intensive examination of a major philosopher or

philosophical problem of the period; topics vary from quarter to quarter.

Au Qtr. Prereq: 10 cr hrs of philos including 512 or equiv with written permission of instructor. Repeatable to a maximum of 15 cr hrs.

703 Studies in Eighteenth Century Philosophy U G 5

An intensive examination of a major philosopher or philosophical problem of the period; topics vary from quarter to quarter.

Wi Qtr. Prereq: 10 cr hrs in philos including 512, or equiv with written permission of instructor. Repeatable to a maximum of 15 cr hrs.

704 Studies in Nineteenth Century Philosophy U G 5

An intensive examination of a major philosopher or philosophical problem of the period; topics vary from quarter to quarter.

Sp Qtr. Prereq: 10 cr hrs in philos including 513, or equiv with written permission of instructor. Repeatable to a maximum of 15 cr hrs.

712* Philosophy of Plato U G 5

Au Qtr. Prereq: 10 cr hrs in philos including 511.

713†* Philosophy of Aristotle U G 5

Wi Qtr. Prereq: 10 cr hrs in philos including 511.

722 Kant: Critique of Pure Reason U G 5

Sp Qtr. Prereq: 10 cr hrs in philos including 513.

728† History of Logic U G 5

A history of logic from ancient Greek times to the present.

Sp Qtr. Prereq: 651 or permission of instructor.

750 Advanced Logical Theory U G 5

Topics include Godel's incompleteness and completeness proofs, Church's theorem, Russell's theories of description, relations, classes, arithmetic, logical truth, logical paradoxes; topics vary yearly.

Sp Qtr. 3 cl. Prereq: 250 and 650. Repeatable to a maximum of 15 cr hrs.

761† Theory of Knowledge II U G 5

An intensive study of a systematic epistemological treatise, such as Blanshard's *Nature of Thought*, Lewis' *Mind and the World Order*, or Lovejoy's *Revolt Against Dualism*.

Sp Qtr. Prereq: 660 or permission of instructor.

764 Metaphysics II U G 5

An intensive study of a systematic metaphysical treatise.

Wi Qtr. Prereq: 663 or permission of instructor.

767 Philosophy of Mind U G 5

Classical and contemporary approaches to the nature of mind, mind-body, other minds, intentionality, and other problems.

Au Qtr.

770 Advanced Studies in Philosophy U G 3-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 21 cr hrs.

771 Selected Topics in Analytic Philosophy U G 5

Au, Wi, Sp Qtrs. Prereq: 150 and 518. Repeatable to a maximum of 21 cr hrs.

776* Problems in Philosophy of Science U G 5

Detailed and critical examination of significant contributions to the traditional and contemporary philosophical literature on the philosophy of science. Sp Qtr. Prereq: 250 or permission of instructor.

H783 Honors Course U 3-5

A program of reading arranged for each student, with individual conferences, reports and papers.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the philos courses taken and with an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the BA with distinction in philos. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs.

General Prerequisites for Courses Numbered 800 and 900

Unless otherwise indicated the prerequisites for 800 and 900-level courses are acceptable foundation courses either in general philosophy, logic and ethics, or history of philosophy, and in some cases in all these subjects.

800† Current Philosophical Literature G 1

Current philosophical journal articles will be read and discussed.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 6 cr hrs.

811* Seminar in the History of Philosophy G 5

Au Qtr. Repeatable to a maximum of 15 cr hrs.

830* Seminar in Political and Social Philosophy G 5

Sp Qtr. Repeatable to a maximum of 15 cr hrs.

831* Seminar in Ethics G 5

Sp Qtr. Repeatable to a maximum of 15 cr hrs.

841†* Seminar in Esthetics G 5

Sp Qtr. Repeatable to a maximum of 15 cr hrs.

850* Seminar in Logic G 5

Sp Qtr. Repeatable to a maximum of 15 cr hrs.

853 Seminar in Induction and Probability Theory G 5

Sp Qtr. Repeatable to a maximum of 15 cr hrs.

861 Seminar in Theory of Knowledge G 5

Su Qtr. Repeatable to a maximum of 15 cr hrs.

864 Seminar in Metaphysics G 5

Au Qtr. Repeatable to a maximum of 15 cr hrs.

870†* Seminar in Philosophy of Mathematics G 5

Sp Qtr. Repeatable to a maximum of 15 cr hrs.

871†* Seminar in Philosophy of Logic G 5

Differing views on the nature of logical inference and logical truth.

Au Qtr. Prereq: 651 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

873* Seminar in Philosophy of Language G 5

Wi Qtr. Repeatable to a maximum of 15 cr hrs.

875†* Seminar in the Philosophy of Religion G 5

Wi Qtr. Repeatable to a maximum of 15 cr hrs.

877 Seminar in Philosophy of Science G 5

Au Qtr. Repeatable to a maximum of 15 cr hrs.

885 Seminar in Philosophical Analysis G 5

Wi Qtr. Repeatable to a maximum of 15 cr hrs.

Medieval and Renaissance Culture

See Medvl and Renais S 888.

993 Individual Studies G 2-15

Doctoral students may register for individual study in areas not normally covered by courses.

Su, Au, Wi, Sp Qtrs. Prereq: An MA degree or at least 50 cr hrs of grad study, and permission of dept chairman.

999 Research in Philosophy G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Photography and Cinema

Office: 206 Haskett Hall, 156 West 19th Avenue, 422-1766.

201 Photography U 5

A basic course concerned with taking, printing, and presenting photographs; including technical, social, historical and aesthetic considerations.

Su, Au, Wi, Sp Qtrs. 1 lec, 2 cl, 2 2-hr lab. Not open to students with credit for 203, 574, 575 or 594. Students must have adjustable camera and meter.

203 Photography for Industrial Design Majors U 3

The fundamentals of photography with emphasis on camera technique, processing and printing as utilized in graphics and design.

Sp Qtr. 2 cl, 2 2-hr lab. Prereq: Ind Dsgn 252. Not open to students with credit for 201, 574, 575, or 594.

220 Color Slide Photography U 3

Introduction to the technical and aesthetic foundation of color slide materials; designed for students who desire only one production course.

Su, Au, Wi, Sp Qtrs. 3 cl. Students should have an adjustable 35 mm camera.

500 History and Systems of Film Theory U G 3

Study of historically important theories of film, with emphasis on the way each theorist deals with recurring issues concerning the general nature of the cinema.

Sp Qtr. 2 2-hr cl.

502 History of Photography U G 3

Study of the history of photography and its contribution to the arts and sciences; the critical and aesthetic considerations of the photographic image.

Su, Au, Wi, Sp Qtrs. 3 1-hr cl and lab.

503 History of Cinema U G 3

History of the motion picture and critique at the contextual, artistic, technical, and information levels; evaluative study of selective films.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl and lab.

505 Film Theory I U G 3

Study of the development of film theory and its relation to the other arts; aesthetic of the medium and the modes of film communication as created, viewed, and analyzed.

Au Qtr. 2 2-hr cl. Prereq: 4th yr or grad standing.

506 Photographic Communications U G 3

Theoretical introduction to the photographic image and film as realist and formative modes of communication, art, language and reflection of reality.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl.

509 Photographic Process U G 3

The principles and theories in the photographic process, including optics, chemistry, sensitometry, and nonconventional processes.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 201 or 551 or written permission of instructor.

521 Intermediate Photography U G 5

Advanced techniques related to specific topics with emphasis on creative photography.

Au, Wi, Sp Qtrs. 2 cl, 2 2-hr lab. Prereq: 201 or 203 or 574 or 575.

522 Zone System U G 5

History, theory and mechanics; application of sensitometry to black and white film; its impact on the students' personal work.

Au, Wi, Sp Qtrs. 2 cl, 2 2-hr lab. Prereq: 509 and 521.

523 Lighting for Photography U G 5

Principles and lighting techniques for both objects and people. Selecting, using and maintaining lighting equipment. Examining the role of light and lighting techniques in creative photography.

Wi, Sp Qtrs. 3 cl, 2 2-hr lab. Prereq: 522.

524 Large Format Photography U G 5

Mechanics, aesthetics, and psychology of large format photography.

Au, Sp Qtrs. 2 cl, 2 2-hr lab. Prereq: 522 or permission of instructor.

531 Color Photography I U G 5

Principles of color photography including color theory, lighting, and recent color processes.

Au, Sp Qtrs. 2 cl, 2 2-hr lab. Prereq: 509, 521 or equiv with written permission of instructor.

532 Color Photography II U G 5

Continuation of 531 with emphasis on color printing; consideration of the relationship of color theory and problems to motion pictures, television, and other creative and technical media.

Au, Wi, Sp Qtrs. 2 cl, 2 2-hr lab. Prereq: 531 and permission of instructor.

551 Cinema Production I U G 5

Principles and procedures in super 8mm cinema production including camera, scripting, lighting, and editing, and sound. Emphasis on film as a form of visual expression.

Su, Au, Wi, Sp Qtrs. 1 cl, 2 2-hr lab. Not open to students with credit for 507 and 508.

552 Cinema Production II U G 5

Beginning 16mm film production, nonsynchronous sound.

Au, Wi, Sp Qtrs. 2 2-hr cl and lab. Prereq: 551. Not open to students with credit for 507.

553 Cinema Production III U G 5

Intermediate 16mm film production, introduction to synchronous sound.

Au, Sp Qtrs. 2 2-hr cl and lab. Prereq: 552 and 555. Not open to students with credit for 508.

554 Script Writing for Film U G 3

Principles and practice in script writing for audiovisual presentations. Various script forms, including theatrical, documentary, television and instructional will be compared and analyzed.

Au Qtr. 2 2-hr cl. Prereq: 551.

555 Editorial Process U G 3

Au, Sp Qtr. 2 2-hr cl. Prereq: 551.

556 Elements of Sound U G 3

The role of sound utilization in motion pictures. The recordings, reproduction and mixing of different sound tracks.

Wi Qtr. 2 2-hr cl. Prereq: 551.

557 Animation U G 3

Film animation as a unique form of communication and art. The techniques, styles and applications analyzed through screenings, discussions, and short studio problems.

Au Qtr. 2 2-hr cl. Prereq: 551.

558 Cinematography U G 3

The study of the principles of motion picture lighting and the analysis of the psychological and aesthetic impact of lighting designs and camera work on audiences.

Wi, Sp Qtrs. 2 2-hr cl. Prereq: 552.

574 Photography for Humanities and Science Students U G 5

For advanced students needing a knowledge of photography as an aid to their work: Application of photography to the humanities and sciences.

Wi Qtr. 3 cl, 2 2-hr lab. Prereq: 3rd yr or grad standing. Not open to students with credit for 521.

575 Photography for Architecture Students U G 3

The fundamentals of photography for students majoring in architecture. Camera techniques, darkroom techniques, perspective control, three-dimensional photography.

Au Qtr. 2 cl, 2 2-hr lab. Prereq: 15 hrs of arch courses or permission of instructor. Not open to students with credit for 201, 203, 574 or 594.

591 Studio Practices I U 3-5

Studio practice following and continuing the basic program of courses undertaken in the first two years.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor or department chairman. Open only to jrs and srs majoring in photog. Repeatable to a maximum of 15 cr hrs.

600 Photography: The Early Years U G 3

A study of the discovery of photography and its early history, with its contribution to the arts, sciences, and society in the 19th century.

Au Qtr. 3 1-hr cl. Not open to students with credit for 504.

601 20th Century Photography to 1940 U G 3

An in-depth survey of 20th century photographic history dealing with pictorialism, the photographic industry, straight photography, and the documentary approach to 1940.

Wi Qtr. 3 cl.

602 History of Photography 1940—Present U G 3

An extensive study of selected topics dealing with contemporary photographic history.

Sp Qtr. 3 cl. Prereq: 502.

605 Film Theory II U G 3-5

Three approaches to the cinema: dialectical, structuralistic, and phenomenological; the three contemporary view-points, their achievements and ideological roots.

Wi Qtr. 2 2-hr cl. Prereq: 505.

608 Reality Image I U G 5

The photograph and motion picture as images of reality; history of the documentary mode to 1945; styles and social functions.

Au Qtr. 2 2-hr cl, 1 1-hr cl. Prereq: 502 or 503 or 506.

609 Reality Image II U G 5

The photographs, motion picture and television media as images of reality; history of the documentary mode from 1945 to present; styles and social patterns.

Wi Qtr. 2 2-hr cl, 1 1-hr cl. Prereq: 502 or 503 or 506.

610 Silent Cinema U G 3

An intensive study of the silent film, its growth and development of film as an international medium.

Au Qtr. 2 2-hr cl.

612 Sound Film: 1928-1948 U G 3

Analytical study of the most important trends of sound film-making; their relationship to other arts and to social and ideological currents of the period.

Wi Qtr 2 2-hr cl. Not open to students with credit for 512.

614 Cinema: 1948—Present U G 3

Analytical study of the most important trends of modern film-making; their relationship to other arts and to contemporary social and ideological currents.

Sp Qtr. 2 2-hr cl.

630 Film Criticism U G 5

Theories, major critical methodologies historically and currently applied to film analysis; practicum in which students begin to consciously develop a personal approach to analysis.

Sp Qtr. 2 2-hr cl. Prereq: Written permission of instructor.

635 Photographic Criticism U G 3

Reading, lectures and discussions dealing with the study and practice of photographic criticism to facilitate and enrich the understanding and criticism of photography.

Wi Qtr. 2 2-hr cl. Prereq: 506 or 521 or Art Educ 604 or permission of instructor. Not open to students with cr for Art Educ 635. Cross-listed in Art Educ.

659 Cinema Production Management U G 3

Responsibilities and procedures of production management including budgeting, production breakdown and scheduling, copyrights and clearances, laboratory coordination, and release print distribution.

Wi Qtr. 2-2-hr cl. Prereq: 552.

666 Cinema Direction U G 5

A study of theoretical and documentary film direction with emphasis on the director's role in relation to performance and camera direction.

Wi Qtr. Approx 6 arr hrs per wk. Prereq: 553.

670 High Contrast Materials U G 3

To familiarize the student with the basic uses of high contrast film, its aesthetic possibilities and advanced processes.

Sp Qtr. 2 cl, 2 2-hr lab. Prereq: 522 or equiv with written permission of instructor.

691 Studio Practices II U G 3-5

Advanced studio practices beyond 591.

Su, Au, Wi, Sp Qtrs. Arr. 2 lab hrs/wk/cr hr. Prereq:

Written permission of instructor and department chairman. Open only to srs and grad students majoring in photog. Repeatable to a maximum of 15 cr hrs.

692 Imagemakers' workshop U G 3-5

Advanced group investigation of aspects of photography and cinema, with emphasis on individual expression and creativity.

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs. Open only to srs and grad students majoring in photog.

693 Individual Studies in Photography U G 3-5

Use of departmental facilities for adding to the student's knowledge of a specially selected photographic problem pertaining to his major field.

Su, Au, Wi, Sp Qtrs. 4-8 lab hrs. Prereq: 9 cr hrs in photog and permission of instructor. Repeatable to a maximum of 18 cr hrs.

694 Group Studies in Photography and Cinema U G 3-5

Group studies in photography and cinema.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: Written permission of instructor. Repeatable to a maximum of 25 cr hrs.

711 Comparative Study in Film and Theatre Directing U G 5

An analytical and descriptive study of the nature and difference of film and theatre direction.

Au Qtr. 2 2-hr cl. Prereq: 505 and 551 and Theatre 310 and 510. Not open to students with cr for Theatre 711. Cross-listed in Theatre.

789 Methods and Purposes of Research U G 3

A study in the methods and purposes of research in the field of photography and cinema.

Au Qtr. 3 cl. Prereq: Grad standing.

790 Symposium in Photography and Cinema U G 2

Studies in historical, philosophical, empirical or studio problems in photography and cinema.

Wi Qtr. Arr. Prereq: 789 or equiv with written permission of instructor. Repeatable to a maximum of 6 cr hrs.

800 Graduate Internship in Photography and Cinema G 5

Planned teaching, curatorial, laboratory or field experience with academic and professional staff under faculty supervision.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Grad standing in photog or equiv with written permission of instructor. Repeatable to a maximum of 10 cr hrs. May not be taken simultaneously with a TA or RA appointment.

805 Film Theory III G 3

Final study of the values of film, its relationship to reality and man; philosophical inquiries into the nature of cinema as visual and kinetic communication.

Sp Qtr. 2 2-hr cl. Prereq: 605.

810 Practicum in Photography and Cinema G 3-5

Advanced experience in the design and development of commissioned works related to institutional and community projects and problems.

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

815 Photographic Image and Society G 5

Advanced group study of the nature of the photographic image; the nature of the image maker and image-making; the societal influences on photographic imagery.

Wi Qtr. 2 2-hr cl. Prereq: Grad standing.

825 Design of Educational Films G 5

Sp Qtr. 3 cl. Prereq: Grad standing.

893 Individual Studies G 3-5

Minor research based on assigned readings and resulting in a paper on cinema and/or photographic history, theory, or criticism.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing and written permission of instructor and the chairman. Repeatable to a maximum of 15 cr hrs.

894 Group Studies in Photography and Cinema G 3-5

Au, Wi, Sp Qtrs. Prereq: Grad standing and written permission of instructor. Repeatable to a maximum of 20 cr hrs.

998 Research in Photography and Cinema G Arr

Research for thesis purpose only.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing in photog. Repeatable to a maximum of 10 cr hrs.

114 Physical Education (Women) U 1

Instructions in the techniques, rules, strategy, and social behaviors of a sport or dance activity selected by the student from a wide range of offerings.

Au Qtr. 3 lab hrs. Open only to women phys ed majors and minors.

115 Physical Education (Women) U 1

Continuation of 114.

Wi Qtr. 3 lab hrs. Open only to women phys ed majors and minors.

116 Physical Education (Women) U 1

Continuation of 115.

Sp Qtr. 3 lab hrs. Open only to women phys ed majors and minors.

131 Physical Education Activities U 3

To develop knowledge, understandings, and skills in the basic activities appropriate to the teacher of physical education.

Au Qtr. 5 2-hr lab. Prereq: Permission of chairman. Required of phys ed majors.

132 Physical Education Activities U 3

Continuation of 131.

Wi Qtr. 5 2-hr labs. Prereq: Permission of chairman. Required of phys ed majors.

133 Physical Education Activities U 3

Continuation of 132.

Au, Sp Qtrs. 5 2-hr labs. Prereq: Permission of chairman. Required of phys ed majors.

137 Sport for the Spectator U 3

A study of the great American spectator sports including football, basketball, baseball, ice hockey, golf, tennis, and others which meet the interests of the class.

Au, Wi, Sp Qtrs. 2 cl, 1 2-hr lab.

138 National Sports and Games U 2

A study of sports and games such as cricket, lawn bowling, rugby, some of which are popular in other countries.

Sp Qtr. 1 cl, 1 2-hr lab.

139 Introductory Program of Outdoor Pursuits U 1

A study of and participation in the skills and knowledges of various sports and outdoor recreational activities in a natural setting.

Minimum of 6 cl and 24 lab hrs. Arr. Not open to students who have completed a corresponding subdivision of 140. Pre-registration with department required. Travel and subsistence costs for activities will be borne by the student.

139.01 Scuba II

Introduction to fresh water diving.

Su, Sp Qtrs. Prereq: 179 or equiv. Student must provide wetsuit (rentals may be available).

139.03 Backpacking I

Introduction to basic backpacking techniques, equipment, wilderness travel, emergency procedures, and environmental awareness.

Su, Au, Sp Qtrs. Student must provide sleeping bag and hiking boots.

139.04 Cycling I

Introduction to cycle touring with an emphasis on safety, equipment repair, maintenance and trip planning.

Su, Au, Sp Qtrs. Student must provide bicycle.

Physical Education

Office: 216 Pomerene Hall, 1760 Neil Avenue,
422-2615

111 Physical Education (Men) U 1

Instructions in the techniques of skills, rules strategies, and the social behavior involved in sports and dance activities.

Au Qtr. 3 lab hrs. Open only to men phys ed majors or minors.

112 Physical Education (Men) U 1

Continuation of 111.

Wi Qtr. 3 lab hrs. Open only to men phys ed majors and minors.

113 Physical Education (Men) U 1

Continuation of 112.

Sp Qtr. 3 lab hrs. Open only to men phys ed majors and minors.

139.05 Winter Backpacking

Designed for the experienced backpacker and covers winter camping, clothing, travel techniques, and advanced first aid.

Wi Qtr. Prereq: 139.03 or previous backpacking experience. Student must provide sleeping bag and hiking boots.

139.06 Skiing

Alpine and/or cross country skiing with instruction appropriate to various ski levels.

Wi Qtr. Prereq: Ski experience desirable. Repeatable to a maximum of 3 cr hrs. Student must provide boots, poles and skis (rentals available).

139.07 Experimental Sections

Activities will be announced and publicized whenever an experimental section is deemed worthy of trial.

Au, Wi, Sp Qtrs.

139.08 Canoeing II

Use of canoeing skills on an overnight trip or on several day trips in the area.

Au, Sp Qtrs. Prereq: Small craft 177.02 or equiv. Student must provide sleeping bag.

139.09 Caving I

Introduction to basic caving techniques, equipment, trip planning, and safety. Cave related ecology, flora and fauna will also be emphasized.

Au, Wi, Sp Qtrs. Student must provide sleeping bag.

139.10 Lightweight Backpacking

Advanced backpacking activities including navigation, rope handling skills, and survival techniques.

Au, Sp Qtrs. Prereq: 139.03 or previous backpacking experience. Not open to students with credit for 140.05. Student must provide sleeping bag and hiking boots.

140 Outdoor Pursuits Program U 3

A study of and participation in the skills and knowledge of various sports and outdoor recreational activities in a natural setting. Ruggieri.

Minimum of 5 3-hr training sessions; minimum of eight trip days. Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs; subdivisions may not be repeated. Pre-registration with dept is required.

140.01 Scuba Diving III

Introduction to ocean diving with emphasis on related ocean environment.

Au, Sp Qtrs. Prereq: Scuba certification or 20 cr hrs of formal scuba instruction.

140.02 Scuba Diving IV

A continuation of Scuba III with emphasis on advanced diving, regulator and tank valve repair and navigation.

Wi, Sp Qtrs. Prereq: Scuba III or certified diver with ocean experience.

140.03 Backpacking II

Opportunity for practice in advanced camping and outing skills on an extended trip.

Au, Wi, Sp Qtrs. Prereq: Backpacking I or prior backpacking experience.

140.04 Cycling II

For the intermediate cyclist who is interested in cycle touring in all types of terrain; cycle maintenance and safety.

Au, Sp Qtrs. Prereq: Cycling I or previous cycling experience.

140.05 Wilderness Exploration and Survival Techniques

Study of living in nature under controlled, stress

conditions: caving, rapelling, and mountain climbing.

Au, Wi, Sp Qtrs.

140.06 Sking

Alpine and/or cross country skiing trips with instruction appropriate to individual skill levels.

Wi Qtr. Prereq: Ski experience desirable.

140.07 Experimental Sections

Activities deemed worthy of developing on an experimental basis. Activities will be announced and published when course is offered.

Au, Wi, Sp. Qtr.

141 Adapted Physical Education Activities U 1

Special sections of conditioning and sport activities open only to students with temporary or permanent physical disabilities which would prevent their participation in regular classes.

Au, Wi, Sp Qtrs. 2 lab hrs arr. Repeatable to a maximum of 12 cr hrs. Offerings to be announced quarterly.

142 Archery

Repeatable to a maximum of 3 cr hrs; subdivisions not repeatable.

142.01 Archery I U 1

Introductory skills and knowledges essential for target shooting.

Su, Au, Sp Qtrs. 2 lab hrs arr.

142.02 Archery II U 2

Intermediate skills essential for target shooting and an introduction to field archery.

Sp Qtr. 2 3-hr labs. Prereq: 142.01 or equiv.

143 Badminton U 1

2 lab hrs arr. Repeatable to a maximum of 2 cr hrs; subdivisions not repeatable.

143.01 Badminton I

Beginning skills and knowledge essential for playing badminton.

Au, Wi Qtrs.

143.02 Badminton II

Continuation of 143.01 with emphasis on advanced strategy in doubles and singles; intermediate skills.

Wi, Sp Qtrs. 2 lab hrs arr. Prereq: 143.01 or equiv racquet sport experience.

144 Basketball U 1

Skill and strategy necessary for playing basketball.

Au, Wi Qtrs. 2 lab hrs arr. Prereq: Previous playing experience. Those with varsity experience should elect 631.02. Registration must include letter designation.

a—Women

b—Men

145 Bowling U 1

2 lab hrs arr. Repeatable to a maximum of 3 cr hrs; subdivisions not repeatable. Students must provide bowling shoes (rentals available) and have ID card.

145.01 Bowling I

Introductory skills and knowledge essential for bowling.

Su, Au, Wi, Sp Qtrs.

145.02 Bowling II

Emphasis on improving the average through increased efficiency in the use of the hook ball and spot bowling.

Su, Au, Wi, Sp Qtrs. Prereq: 145.01 or ability to average at least 125.

145.03 Bowling III

Advanced skills necessary for competitive bowling.
Au, Sp Qtrs. Prereq: 145.02 or ability to average over 150 with a hook ball.

146 Boxing for Beginners U 1

Fundamentals of boxing.
Au, Wi, Sp Qtrs. 2 lab hrs arr.

147 Conditioning Activities U 2

Lecture material covering principles of conditioning is applied in the activity section which the student elects.

Au, Wi, Sp Qtrs. 1 cl, 3 1-hr lab. Register for desired laboratory sections using alphabetical designation.

- a—Circuit Training
- b—Ice Skating
- c—Jogging
- d—Nautilus Training
- e—Posture and Figure Control
- f—Swimming
- g—Weight Training
- h—Diet and Exercise

148 Lifetime Fitness Programs U 1

Continued application of the principles covered in 147.

Au, Wi, Sp Qtrs. 3 1-hr labs. Prereq: 147. Repeatable to a maximum of 2 cr hrs; subdivisions not repeatable. Register for desired laboratory section using alphabetical designation.

- a—Circuit Training
- b—Ice Skating
- c—Jogging
- d—Nautilus Training
- e—Posture and Figure Control
- f—Swimming
- g—Weight Training
- h—Diet and Exercise

150 Dance—Folk U 1

Folk dances of selected countries including American folk dances.

Wi Qtr. 2 lab hrs arr. Women register for 150A and men for 150B to insure even partner pairings.

151 Dance—Social

Au, Wi, Sp Qtrs. 2 lab hrs arr. Repeatable to a maximum of 3 cr hrs; subdivisions not repeatable. Women register for 151A01 or 151A02 and men for 151B01 or 151B02 to insure even partner pairings.

151.01 Social Dance I U 1

Skills of social dancing with emphasis on the waltz, jitterbug, fox trot, rhumba, cha-cha, polka, hustle, tango on the beginning level.

151.02 Social Dance II U 2

Advanced skills and techniques of social dance with emphasis on the waltz, jitterbug, fox trot, rhumba, cha-cha, tango, hustle, polka.

Prereq: 151.01 or equiv.

152 Dance—Square U 1

Introductory skills and knowledge essential for performing American square dances.

Wi Qtr. 2 lab hrs. Women register for 152A and men for 152B to insure even partner pairing.

154 Fencing

Repeatable to a maximum of 4 cr hrs; subdivisions not repeatable.

154.01 Fencing I U 1

Fundamentals of foil fencing.
Au, Wi, Sp Qtrs. 2 lab hrs arr.

154.02 Fencing II U 1

Continuation of 154.01 with emphasis on the bout.

Wi, Sp Qtrs. 2 lab hrs arr. Prereq: 154.01 or equiv.

154.03 Fencing III U 2

Intermediate-advanced skills of foil fencing; introduction to epee and sabre; students will begin specializing in one weapon.

Wi, Sp Qtrs. 4 lab hrs arr. Prereq: 154.02 or 154.04 or equiv.

154.04 Intensive Elementary Fencing U 2

Beginning-elementary fencing for students wishing to acquire the basic skills in one quarter.

Au, Wi Qtrs. 4 lab hrs arr. Not open to students with credit for 154.01, 154.02, or 154.03.

155 Field Hockey U 1

Au Qtr. 2 lab hrs arr.

Repeatable to a maximum of 2 cr hrs; subdivisions not repeatable.

155.01 Field Hockey I

Beginners skills and knowledge for playing hockey.

155.02 Field Hockey II

Continuation of 155.01 with emphasis on game play and strategy.

Au Qtr. Prereq: 155.01 or equiv.

156 Football U 1

Fundamental skills of touch football.

Au Qtr. 2 lab hrs arr.

156.01 Touch Football for Women

Elementary skills and play.

156.02 Touch Football for Men

Elementary-intermediate skills.

Prereq: Previous playing experience presumed. Not open to students with varsity experience.

156.03 Flag Football

Co-ed sections for experienced touch football players.

157 Golf U 1

2 lab hrs. Repeatable to a maximum of 2 cr hrs; subdivisions not repeatable.

157.01 Golf I

Introductory skills and knowledge preparatory to course play with emphasis on irons.

Su, Au, Wi, Sp Qtrs.

157.02 Golf II

Continuation of 157.01 with emphasis on woods and on introduction to course play.

Au, Sp Qtrs. Prereq: 157.01 or equiv. Advanced players should elect 631.06.

158 Gymnastic Apparatus U 1

2 lab hrs arr. Repeatable to a maximum of 3 cr hrs; subdivisions 158.01 and 158.03 not repeatable.

158.01 Women's Apparatus I

Introduction to the four Olympic gymnastic events for women: floor exercise, vaulting, beam and uneven parallel bars.

Au, Wi Qtrs.

158.02 Women's Apparatus II

Continuation of 158.01 with emphasis on learning progressively more challenging movement and routines; students begin specializing.

Wi, Sp Qtrs. Prereq: 158.01 or previous experience. Repeatable to a maximum of 2 cr hrs. Advanced students should elect 631.05.

158.04 Men's Apparatus I U 1

Introduction to the six Olympic gymnastics events for men: floor exercise, side horse, rings, vaulting, parallel bars, and horizontal bar.

Au, Wi Qtrs.

158.05 Men's Apparatus II U 1

Continuation of 158.04 with emphasis on learning progressively more challenging movements and routines.

Wi, Sp Qtrs. Prereq: 158.04 or previous experience. Repeatable to a maximum of 2 cr hrs. Advanced students should elect 631.05.

160 Handball

Repeatable to a maximum of 4 cr hrs; subdivisions not repeatable. Student must provide handball glove.

160.01 Handball I U 1

Beginning skills and knowledge necessary for playing handball.

Au, Wi, Sp Qtrs. 2 lab hrs arr.

160.02 Handball II U 1

Continuation of 160.01 with emphasis on the use of strategy in the playing situation.

Au, Wi, Sp Qtrs. 2 lab hrs arr. Prereq: 160.01 or equiv.

160.03 Handball III U 2

Participation in both singles and doubles with emphasis on strategy and competition.

Wi, Sp Qtrs. 4 lab hrs arr. Prereq: 160.02 or equiv.

161 Horseback Riding U 1

Au, Wi, Sp Qtrs. 3 lab hrs arr. Repeatable to a maximum of 3 cr hrs; subdivisions not repeatable. Travel and stable costs (rental of horse and equipment) for activities must be borne by the student. Offered only when arrangements can be made with local stables.

161.01 Horseback Riding I

Fundamental skills and knowledge essential for safe riding.

161.02 Horseback Riding II

Continuation of 161.01 with emphasis on improved form and control of the horse.

Prereq: 161.01 or knowledge of canter leads and ability to post diagonals.

161.03 Horseback Riding III

Introductory skills of jumping with stress on hunt seat and low jumps.

Prereq: 161.02 or equiv.

162 Ice Skating

Basic skills of ice skating.

Repeatable to a maximum of 4 cr hrs; subdivisions not repeatable. Students must provide skates (rentals available). See 147 and 148 for skate conditioning.

162.01 Skating I U 1

Fundamentals of balance, movement and safety on the ice; forward, backward and stopping. Guidance in choice, use and care of equipment.

Su, Au, Wi, Sp Qtrs. 2 lab hrs arr. Open only to beginners.

162.02 Skating II U 1

Elementary skating for those with no balance problems and more than 15 hrs on the ice; stress on basic strokes and stops.

Su, Au, Wi, Sp Qtrs. 2 lab hrs arr. Prereq: 162.01 or equiv.

162.03 Skating III U 2

Power skating: designed for persons having had

more than 30 hrs on ice and who can execute the basic strokes (including back crossovers) with correct techniques.

Au, Wi, Sp Qtrs. 4 lab hrs. Prereq: 162.02 or 162.04 or equiv skill level.

162.04 Intensive section U 2

Skills of 162.01 and 162.02 are covered in one quarter.

Au, Wi Qtrs. 4 lab hrs. Not open to students with credit for 162.02 and/or 162.02 or 162.03.

163 Figure Skating

Figure skating skills and techniques including the elements of free skating and compulsory figures.

Repeatable to a maximum of 5 cr hrs; subdivisions not repeatable. Students must provide figure skates (no rentals).

163.01 Figure Skating I U 2

Lectures: survey of figure skating includes history, types of competition, judging, recreational and show skating. Lab: form in stroking, edges, jumps and spins.

Au, Wi, Sp Qtrs. 1 cl, 4 lab hrs arr. Prereq: 162.03 or permission of instructor.

163.02 Figure Skating II U 1

Free style only; all of the single jumps through axels, basic spins, and advanced footwork.

Sp Qtr. 3 lab hrs arr. Prereq: 163.01 or permission of instructor.

163.03 Creative Skating U 2

Skating as a vehicle of personal expression; performance skating, individual and group show skating and show production.

Sp Qtr. 5 lab hrs arr and participation in show when given. Prereq: Previous instruction in figure skating and permission of instructor.

164 Ice Hockey U 1

Fundamental skills and knowledges essential for playing ice hockey.

2 lab hrs arr. Repeatable to a maximum of 2 cr hrs; subdivisions not repeatable. Students must provide hockey skates (rentals available).

164.01 Hockey I

Introductory skills and techniques of ice hockey.

Au, Wi, Sp Qtrs. Prereq: 162.02 or equiv. Open only to beginners.

164.02 Ice Hockey II for Women

Intermediate-advanced play.

Wi, Sp Qtrs. Prereq: 164.01 or previous playing experience.

164.03 Ice Hockey II for Men

Intermediate-advanced play.

Wi, Sp Qtrs. Prereq: 164.01 or previous playing experience.

165 Judo U 1

2 lab hrs arr. Repeatable to a maximum of 3 cr hrs; subdivisions not repeatable.

165.01 Judo I

Introductory skills and knowledge essential in throwing techniques and mat work of Judo.

Au, Wi, Sp Qtrs.

165.02 Judo II

Intermediate skills and techniques of Judo as well as an introduction to the skills involved in competitive Judo.

Au, Wi, Sp Qtrs. Prereq: 165.01 or certified GOKYU.

165.03 Judo III

Advanced skill acquisition in techniques of sport Judo and experience in competitive Judo.

Wi, Sp Qtrs. Prereq: 165.02 or certified YONKYU.

166 Karate

Repeatable to a maximum of 3 cr hrs; subdivisions not repeatable.

166.01 Karate I U 1

Introduction to the various forms and techniques in the Shotokan style.

Au, Wi, Sp Qtrs. 2 lab hrs.

166.02 Karate II U 2

The refinement of basic forms and techniques and the introduction of advanced forms; more emphasis on free fighting.

Wi, Sp Qtrs. 4 lab hrs arr. Prereq: 166.01 or equiv.

167 Lacrosse U 1

Skills and knowledge essential for playing Lacrosse.

Sp Qtr. 2 lab hrs arr.

167.01 Women's Lacrosse**167.02 Men's Lacrosse****168 Movement and Self Awareness U 1**

Student's natural movement vocabulary is explored and extended through movement experiences designed to heighten self and social awareness; creative rather than imitative approach is used.

Wi, Sp Qtrs. 2 lab hrs arr.

170 Racquetball

Repeatable to a maximum of 4 cr hrs; subdivisions not repeatable.

170.01 Racquetball I U 1

Beginning skills and knowledge for students with no prior experience in racquetball.

Su, Au, Wi, Sp Qtrs. 2 lab hrs arr.

170.02 Racquetball II U 1

Continuation of 170.01 with emphasis on strategy and the playing of singles.

Au, Wi, Sp Qtrs. 2 lab hrs arr. Prereq: 170.01 or equiv.

170.03 Racquetball U 2

Participation in both singles and doubles with emphasis on strategy and competition.

Au, Sp Qtrs. 4 lab hrs arr. Prereq: 170.02 or equiv.

171 Rifflery U 1

Au, Wi, Sp Qtrs. 1 2-hr lab. Repeatable to a maximum of 2 cr hrs; subdivisions not repeatable.

171.01 Rifflery I

Introduction to target shooting techniques in the prone and standing positions.

171.02 Rifflery II

A continuation of 171.01 stressing the other shooting positions.

Prereq: 171.01 or Mil Sc 112 or equiv.

172 Self Defense U 1

Skills and understandings essential to defend oneself against an aggressor with emphasis on avoiding attack.

Au, Wi, Sp Qtrs. 2 lab hrs arr.

173 Snow Skiing U 1

Introductory skills and knowledges essential for skiing.

Wi Qtr. 1 2-hr lab. Open only to beginners. See 139 and 140 for additional offerings.

174 Soccer U 1

Techniques and knowledge essential for playing soccer.

Au Qtr. 2 lab hrs arr. Repeatable to a maximum of 2 cr hrs; subdivisions not repeatable.

174.01 Women's Soccer I**174.02 Women's Soccer II**

Prereq: 174.01 or previous playing experience.

174.03 Men's Soccer I

Open only to men with little or no soccer experience.

174.04 Men's Soccer II

Prereq: 174.03 or previous playing experience.

175 Softball U 1

Skills and knowledge necessary for playing softball.

Sp Qtr. 2 lab hrs arr. Repeatable to a maximum of 2 cr hrs; subdivisions not repeatable. Advanced students should elect 631.15.

175.01 Women's Slo Pitch I

Not open to students with credit for 175.03. Open only to women with little or no softball experience.

175.02 Women's Slo Pitch II

Prereq: 175.01 or 175.03 or intermediate level skills. Not open to students with credit for 175.04.

175.03 Women's Fast Pitch I

Not open to students with credit for 175.01. Open only to students with little or no softball experience.

175.04 Women's Fast Pitch II

Prereq: 175.01 or 175.03 or intermediate level skills.

175.06 Men's Slo Pitch I

Not open to men with credit for 175.08. Open only to students with little or no softball/baseball experience.

175.07 Men's Slo Pitch II

Prereq: 175.06 or 175.08 or intermediate skills. Not open to students with credit for 175.09.

175.08 Men's Fast Pitch I

Not open to students with credit for 175.06. Open only to students with little or no softball/baseball experience.

175.09 Men's Fast Pitch II

Prereq: 175.06 or 175.08 or intermediate level skills. Not open to students with credit for 175.07.

176 Squash U 1

Introductory skills and knowledge essential for playing squash.

Wi, Sp Qtrs. 2 lab hrs arr.

177 Small Craft Operation

Introduction to the operation of various types of small craft; emphasis on basic skills and safety procedures.

Prereq: Swim a minimum of 100 yards without stopping. Repeatable to a maximum of 4 cr hrs; subdivisions not repeatable.

177.01 Recreational Boating U 1

Operation of row boats, canoes, sail boats, and outboard motors.

Au, Sp Qtrs. 2 lab hrs arr.

177.02 Canoeing I U 1

Basic paddling skills.

Su, Au, Sp Qtrs. 2 lab hrs arr. Open to students with little or no canoeing experience. See 139 and 140 for additional offerings.

177.03 Sailing I U 1

Basic sailing procedure: sailing canoes are used. Au, Sp Qtrs. 2 lab hrs arr.

177.04 Instructorship in Small Craft U 2

Designed to lead to certification with the American Red Cross in canoeing.

Sp Qtr. 4 lab hrs arr. Prereq: 177.02 or equiv.

178 Swimming and Diving U 2

Fundamental swimming and diving skills with emphasis on personal safety.

Su, Au, Wi, Sp Qtrs. 4 lab hrs arr. Repeatable to a maximum of 4 cr hrs; subdivisions not repeatable. Student must provide bathing suit. See 147 and 148 for swim conditioning.

178.01 Swimming I

Beginning swimming.

Open only to non-swimmers and students with no deep water experience.

178.02 Swimming II

Elementary swimming skills for those who can swim in deep water but no farther than 2 pool lengths (50 yards).

178.03 Swimming III

Intermediate skills for those who can swim at least 100 yards using the front crawl and at least 2 other strokes.

Prereq: 178.01 or equiv.

179 Skin and Scuba Diving U 3

Skills and knowledge essential for safe diving and preparation for open water checkout dives.

Au, Wi, Sp Qtrs. 2 cl, 2 lab hrs arr. Prereq: 178.03 or ability to swim ¼ mile in 10 minutes. Student must provide bathing suit. See 139 and 140 for additional offerings.

180 Springboard Diving

Au, Wi, Sp Qtrs. Prereq: 178.02 or equiv. Repeatable to a maximum of 3 cr hrs; subdivisions not repeatable. Student must provide bathing suit.

180.01 Diving I U 1

Fundamentals of diving from the one meter (low) board.

2 lab hrs arr.

180.02 Diving II U 2

Intermediate diving skills; many of which will be taught on the trampoline.

4 lab hrs arr. Prereq: 180.01 or the ability to perform the following dives: front, back, inward, ½ twist, somersaults (front and back).

181 Synchronized Swimming U 1

Au, Wi, Sp Qtrs. 2 lab hrs arr. Prereq: 178.03 or equiv. Repeatable to a maximum of 2 cr hrs; subdivisions not repeatable. Student must provide bathing suit.

181.01 Synchronized Swimming I

Skills necessary for basic synchronized swimming.

181.02 Synchronized Swimming II

Intermediate skills of synchronized swimming.

Prereq: 181.01 or previous synchronized experience.

182 Life Saving and Water Safety

Repeatable to a maximum of 9 cr hrs; subdivisions not repeatable. Student must provide bathing suit.

182.01 Advanced Swimming and Life Saving U 2

Designed to lead to American Red Cross Advanced Life Saving certification.

Au, Wi, Sp Qtrs. 4 lab hrs arr. Prereq: 178.03 or equiv.

182.02 Water Safety Instructors U 2

Designed to lead to certification as an American Red Cross Water Safety Instructor.

Au, Wi, Sp Qtrs. 4 lab hrs arr. Prereq: 182.01 or unexpired American Red Cross Advanced Lifesaving Certificate.

182.03 Handicapped Swimming Instructor U 2

Designed to lead to certification as an American Red Cross Handicapped Swimming Instructor.

Au, Sp Qtrs. 1 2-hr lab, 1 3-hr field trip. Prereq: Current ARC Water Safety Instructor's certificate or 662 or permission of the instructor.

182.04 Pool and Beach Operation U 3

Operational aspects including office and personnel, budgeting, public relations, recreation and safety, equipment operation and maintenance, water filtration, recirculation and sanitation.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: Unexpired Safety Instructorship or concurrent registration in 182.02.

183 Water Polo U 2

Introductory skills and knowledge essential in the sport of water polo.

Au, Wi, Sp Qtrs. 4 lab hrs arr. Prereq: 178.03 or equiv. Student must provide bathing suit.

185 Table Tennis U 1

Au, Wi, Sp Qtrs. 2 lab hrs arr. Repeatable to a maximum of 2 cr hrs; subdivisions not repeatable.

185.01 Table Tennis I

Beginning skills and knowledge essential for playing table tennis with emphasis on the use of backspin and topspin in the singles games.

185.02 Table Tennis II U 1

Continuation of 185.01 with emphasis on advanced strokes and their application in the playing of singles and doubles.

Prereq: 185.01 or the ability to do backspin and topspin serves.

186 T'ai Chi Ch'uan U 1

Introduction to the Oriental art of T'ai Chi Ch'uan with specific emphasis on an exploration of body/energy awareness through the movement form.

Sp Qtr. 1 2-hr lab.

187 Team Handball U 1

Skills and knowledge essential for playing team handball.

Wi Qtr. 2 lab hrs arr.

188 Tennis

Skill and knowledge essential in playing tennis.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 4 cr hrs; subdivisions not repeatable. Student must provide racket and 3 balls; advanced students should elect 631.10.

188.01 Tennis I U 1

Beginning skills; forehand, backhand and serve—singles play.

2 lab hrs arr.

188.02 Tennis II U 1

Elementary skills; introduction to doubles play.
2 lab hrs arr. Prereq: 188.01 or equiv.

188.03 Tennis III U 2

Continuation of 188.02 with emphasis on playing strategy for both doubles and singles.
4 lab hrs arr. Prereq: 188.02 or 188.04 or equiv.

188.04 Intensive Tennis U 2

188.04 and 188.02 are included in one quarter for student desiring an intensive experience.
4 lab hrs. Not open to students who can qualify for 188.02.

189 Track and Field U 1

Introductory skills, knowledge and conditioning for various track and field events.
3 lab hrs arr. Not open to students with varsity experience.

190 Trampoline and Acrosport

Au, Wi, Sp Qtrs. Repeatable to a maximum of 4 cr hrs; subdivisions not repeatable.

190.01 Trampoline I U 1

Introduction to basic trampoline skills; sequential coverage of basic drops leading to turns, twists and saltos.
Au, Wi Qtrs. 2 lab hrs arr.

190.02 Trampoline II U 2

Continuation of 190.01 with emphasis on routine construction and saltos; introduction of twisting saltos.
Sp Qtr. 4 lab hrs arr. Prereq: 190.01 or 190.04.

190.04 Acrosport I U 1

Basic skills of the areas of trampoline, tumbling and hand balancing.
Au, Wi Qtrs. 2 lab hrs.

190.05 Acrosport II U 2

Continuation of 190.04 with emphasis on routine construction for competition or exhibition.
Wi, Sp Qtrs. 4 lab hrs arr. Prereq: 190.04.

191 Volleyball U 2

Au, Wi, Sp Qtrs. 4 lab hrs arr. Repeatable to a maximum of 4 cr hrs; subdivisions not repeatable. Advanced students should elect 631.14.

191.01 Volleyball I

Introduction to power volleyball.
Au, Wi, Sp Qtrs.

191.02 Volleyball II

Continuation of power volleyball fundamental skill perfection and game strategies woven to produce an intermediate playing experience.
Au, Sp Qtrs. Prereq: 191.01 or equiv.

192 Wrestling U 1

Au, Wi, Sp Qtrs. 2 lab hrs arr. Repeatable to a maximum of 2 cr hrs; subdivisions not repeatable.

192.01 American Folkstyle Wrestling

Skills, techniques and knowledge of American amateur wrestling.
Au, Wi Qtrs.

192.02 Freestyle and Greco-Roman Wrestling

Rules and techniques of the two competing forms of Olympic wrestling.
Sp Qtr. Prereq: 192.01 or high school wrestling experience.

195 Yoga U 1

Introduction to fundamental techniques and basic yogic principles of pranayama (breath control), asana (posture), relaxation and meditation. Emphasis on major postures.

Au, Wi, Sp Qtrs. 2 lab hrs arr.

208 Orientation to Physical Education U 2

Consideration of personal competencies essential for effective teaching, research, recreation, coaching; investigation of areas of concentration; relationships to other disciplines.

Au, Wi, Sp Qtrs. 1 cl, 2 hrs arr. Repeatable to a maximum of 4 cr hrs.

221 Sports Officiating U 2

Study of playing rules, rule interpretation, techniques and mechanics of officiating various interscholastic and intercollegiate athletic sports.

2 cl, 2 lab hrs. Prereq: Satisfactory evidence of playing skill in the elected athletic sport. Repeatable to a maximum of 6 cr hrs, subdivision not repeatable.

221.01 Baseball

Sp Qtr.

221.02 Basketball

Au, Wi Qtrs. Not open to students with credit for 222. Students completing the course are eligible for certification to officiate in Ohio schools.

221.04 Football

Au Qtr. Not open to students with credit for 221. Students completing the course are eligible for certification to officiate in Ohio schools.

221.05 Gymnastics

Wi Qtr.

221.09 Aquatics

Sp Qtr.

221.12 Wrestling

Wi Qtr. Students completing the course are eligible for certification to officiate in Ohio schools.

221.14 Volleyball

Au Qtr.

221.15 Softball

Sp Qtr.

230 Nature of Human Movement U 3

The study of human movement, including its organization, significance and cultural implications. Kleinman and Wardwell.

Au, Wi, Sp Qtrs. 3 2-hr cl and lab.

231 Physical Education Activities U 1

Designed to develop knowledge, understandings, and skills in the basic activities appropriate to the teacher of physical education.

Au, Wi, Sp Qtrs. 3 1-hr labs. Required of phys ed majors. Cannot be repeated for credit.

232 Physical Education Activities U 1

Continuation of 231.

Au, Wi, Sp Qtrs. 3 1-hr labs. Required of phys ed majors. Cannot be repeated for credit.

233 Physical Education Activities U 1

Continuation of 232.

Au, Wi, Sp Qtrs. 3 1-hr labs. Required of phys ed majors. Cannot be repeated for credit.

260 Sport in Contemporary America U 3

A study of the contemporary sport scene in America; the issues, the controversies confronting the athlete, the coach, the administrator and the general public. Nelson.

Wi Qtr. 1 1½-hr cl; 1 1½ hr rec.

261 Perspectives of Sport U 3

Sport as it extends into the areas of history, art, literature, and psychology; its meaning in our lives. Sp Qtr. 2 1½-hr cl.

270 Supervision of Playground and Community Recreation Activities U 2

Programming of recreational activities relative to community conditions; overview of activities desirable for a broad, comprehensive program. Sp Qtr. 2 2-hr labs.

271 Camp Counseling U 3

Investigation of the responsibilities and duties of the counselor in various types of camps; practical experience in basic craft skills.

Au, Sp Qtrs. 2 cl, 7-day Sept workshop. Sp Qtr. 2 2-hr cl. Prereq: Phys ed major and minor students shall have completed the Sept workshop immediately preceding the qtr of enrollment. Spring qtr section is open to all University students.

289 Directed Field Experience U 2-5

Prereq: Written permission of division adviser. Repeatable to a maximum of 20 cr hrs.

289.01 Introductory Experiences in a School System

For students seeking admission to professional status in physical education.

Au, Wi, Sp Qtrs.

Coates.

289.06 Public Recreation

Au, Wi, Sp Qtrs.

For students in public recreation curriculum.

293 Individual Studies U 1-4

For individuals not majoring in physical education who wish to pursue special studies or recreational sports activities.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

294 Group Studies U 1-5

For groups of students not majoring in physical education who wish to pursue special studies or recreational sports activities.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of dept required. Repeatable to a maximum of 10 cr hrs.

323 Creative Physical Education for Elementary Teachers U 3

Theory of physical activities as a medium for creative self-expression; exploration of rhythmical, individual and group activities and their relation to development of children. Gilliom.

Au, Wi, Sp Qtrs. 2 2-hr labs. Not open to students with credit for 541.

360 Kinesiology U 5

The science of bodily movement. Harper, Oyster, and Simonian.

Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: Zoology 231, 232. Not open to students with credit for 660.

414 Science of Development Through Activity U 5

A systematic study of factors in human movement which affect the physiological development of the organism. Bartels and Fox.

Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 360, and Zoology 232. Not open to students with credit for 214.

430† Basic Movement U 2

The study and practice of basic movement as a category of activity in the physical education instructional program.

1 cl, 1 2-hr lab. Prereq: 230.

440 Recreation for Special Populations U 3

Introduction to programs of recreation services for the aged, economically disadvantaged, youthful and adult offenders and persons with physical or mental handicaps.

Wi Qtr. 3 cl. Prereq: 5 cr hrs in biological sciences and Hlth Edu 200 or equiv. Open only to majors in recreation.

441 Motor Learning U 5

Study of major variables affecting the learning process as related to the acquisition of motor skills; major attention given to factors in the educational environment which teachers may control. Siedentop.

Au, Wi, Sp Qtrs. 3 2-hr cl. Prereq: Recommended 360, Psych 230, and Zoology 232.

460 Kinesiology for Dancers U 3

Scientific study of dance movements including functional anatomy; basic mechanics; flexibility and injury prevention. Simonian.

Sp Qtr. 4 cl, 1 2-hr lab. Prereq: 10 cr hrs in biological sciences.

485 Medical Factors in the Work Environment U 4

Study of human responses and adaptations to work under different environmental stresses in industrial settings.

Wi Qtr. 2 2-hr cl. Prereq: Advanced undergrad standing or permission of instructor.

489 Advanced Field Experience U 2-5

Directed teaching experience for advanced undergraduate students in physical education.

Prereq: Permission of instructor or acceptance into physical education program. Repeatable to a maximum of 20 credit hours, subdivisions not repeatable.

489.02 Peer Teaching U 2

Designed to provide advanced undergraduate students with field experience in teaching their peers and to assist students in the analysis of their own and other's teaching capabilities.

Au, Wi Qtrs. 1 cl, 2 hr arr.

489.04 Teaching in Adapted Physical Education U 2

Experience in assessing and programming of gross motor activities with emphasis on teaching experience with handicapped children.

Au, Wi Qtrs. 1 cl, 2 hr arr.

489.05 Interscholastic Coaching U 2-5

Su, Au, Wi, Sp Qtrs. Not open to students with cr for 289.05.

489.07 Secondary School Programs U 2-5

Au, Wi, Sp Qtrs. Not open to students with cr for 289.07.

489.08 Elementary School Programs U 2-5

Au, Wi, Sp Qtrs. Not open to students with cr for 289.08.

489.09 Teaching of Sport and Dance in College Program U 2-5

Su, Au, Wi, Sp Qtrs. Not open to students with cr for 289.09.

530 Administration of Interscholastic Athletics U 2

An introductory course in athletic administration, including scheduling contests, records, eligibility, contest management, facilities and equipment, budgets and finance, public relations, and awards. Coates.

Au, Sp Qtrs. 2 cl.

541 Physical Education for the Elementary School Child U 5

The study of content, program design and teaching techniques appropriate to the elementary school child. Breiner and Hewlett.

Au, Wi, Sp Qtrs. 2 cl, 3 2-hr labs. Prereq: 230, and Psych 230.

586 Elementary School Student Teaching U 6-9

Observation, participation, and responsible teaching in a public school; individual and group conferences or seminars. Schroeder.

Au, Wi, Sp Qtrs. Prereq: 4th yr standing. Repeatable to the required 15 cr hrs in student teaching 586 and/or 587. Students desiring teaching in more than one area should indicate accurately both section numbers and hours in each.

587 Student Teaching in Secondary Schools U 6-15

Observation, participation, and responsible teaching in a public school; individual and group conferences or seminars. Schroeder.

Au, Wi, Sp Qtrs. Prereq: 4th yr standing. Repeatable to the required 15 cr hrs in student teaching 586 and/or 587. Students desiring teaching in more than one area should indicate accurately both section numbers and hours in each.

620 Teaching of Athletic Sports

Study in the theory, strategy and mechanics of coaching various interscholastic, intercollegiate athletic sports.

Au, Wi, Sp Qtrs. 2 cl, 2 lab hrs. Prereq: Satisfactory evidence of playing skill in the elected athletic sport. Repeatable to a maximum of 9 cr hrs; subdivisions not repeatable, except 620.09.

620.01 Baseball U G 3

Not open to students with credit for 420.01 or 547.

620.02 Basketball U G 3

Not open to students with credit for 420.02 or 519.

620.03 Fencing U G 2

Not open to students with credit for 420.03.

620.04 Football U G 3

a—Men

Not open to students with credit for 420.04 or 546.

620.05 Gymnastics U G 3

a—Men

b—Women

Not open to students with credit for 420.05.

620.06 Golf U G 2

Not open to students with credit for 420.06.

620.08 Soccer U G 3

a—Men

b—Women

Not open to students with credit for 420.08.

620.09 Aquatics U G 3

Not open to students with credit for 420.09 or 549.

620.10 Tennis U G 2

Not open to students with credit for 420.10.

620.11 Track and Field U G 3

a—Men

b—Women

Not open to students with credit for 420.11 or 544.

620.12 Wrestling U G 2

a—Men

Not open to students with credit for 420.12.

620.14 Volleyball U G 2

Not open to students with credit for 420.14.

621 Principles of Physical Education U G 5

Origins and nature of modern physical education as developmental experience and medium of education; contributions to organic growth, personal resources, and growth in social relationships. Mand and Nelson.

Au, Wi Qtrs. 5 cl. Prereq: Major or minor in phys ed, or permission of instructor.

622 History of Physical Education and Sports from Ancient Times to Nineteenth Century Europe U G 3

A history of physical education and sports which includes primitive societies, Greek and Roman civilizations, the medieval period, and European countries in the 18th and 19th centuries. Bennett.

Au Qtr. 3 1-hr cl. Not open to students having credit for 640.

623 History of Physical Education and Sports in the United States U G 3

The development of physical education and sports in the United States from colonial times to the present and the factors which have affected their growth. Bennett.

Wi Qtr. 3 1-hr cl. Not open to students with credit for 540.

630 Problems in Intramural Sports U G 2

A critical analysis of intramural sports programs; problems of policy and administration of programs on the elementary, secondary and college levels will be studied. Beekman and Bailey.

Au, Sp Qtrs. 2 cl.

631 Advanced Skill Techniques U G 2

Advanced techniques of performance and a specialized and intense study of appropriate technical literature.

4 1-hr labs. Prereq: Placement examination by audition, and permission of instructor. Repeatable to a maximum of 10 cr hrs. Subdivisions may not be repeated.

631.01 Baseball

Sp Qtr.

631.02 Basketball

Au Qtr.

631.05 Gymnastics

Au Qtr.

631.06 Golf

Au Qtr.

631.09 Aquatics

Wi Qtr.

631.10 Tennis

Au Qtr.

631.14 Volleyball

Sp Qtr.

631.15 Softball

Sp Qtr.

631.16 Advanced Recreational Dance

Wi Qtr.

631.17 Badminton and Related Racket Sports

Sp Qtr.

631.20 Special Offerings

Su, Au, Wi, Sp Qtrs.

642 Organization and Administration of Physical Education U G 3

Study of policies and procedures in the organization and administration of the physical education program. Breiner.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 621, or equiv.

647 Physical Education for Secondary School Youth U G 3

Emphasis on the study of needs, interests, and abilities of secondary school youth, and methods and materials for the conduct of appropriate sports activities. Hendrix.

Au, Wi, Sp Qtrs. 2 cl, Wi Qtr. Field experience, 4 hrs. Prereq: Satisfactory proficiency in 231-233 inclusive, or equiv.

648 Physical Education for Senior High School Youth U G 3

An over-view of psycho-social factors as they interact with the sport participation of individuals and groups. Sp Qtr. 3 2-hr cl.

650 Evaluation in Physical Education U G 3

A critical study of methods in evaluating biological, social, and psychological outcomes for physical education. Mathews and Simonian.

Au, Wi, Sp Qtrs. 2 cl, 1 2-hr lab.

661 Care and Prevention of Athletic Injuries U G 5

A consideration of the methods of prevention and care of injuries, conditioning of athletes and safety provisions for the conduct of physical education. Bordner, Daniel, and Hill.

Au, Wi, Sp Qtrs. 3 cl, 2 2-hr labs. Prereq: 360, or equiv. Open only to students in phys ed, hlth edu and physiotherapy, or permission of instructor.

662 Adapted Physical Education U G 3

The organization and administration of individual physical education for typical and atypical students including the child with a physical or learning disability; laboratory experience with the atypical. Ersing and Wheeler.

Au, Wi, Sp Qtrs. 2 cl, 1 3-hr lab. Prereq: 360, 541, and 647.

664 Science of Preparing People for Competitive Sports U G 5

Direct application of broad principles of anatomy, physiology, and kinesiology to sports and activities of the individual's interest; emphasis on understanding sports injuries and planning progressive conditioning systems.

Wi Qtr. 5 cl. Prereq: 5 hrs in biological sciences. Not open to phys ed majors.

692 Workshop U G 1-8

Intensive study of a physical education topic of interest to the participant for the purpose of developing sound principles and practices relating to it.

Su Qtr. Cl arr. Prereq: Teaching experience and written permission of workshop director. Repeatable to a maximum of 12 cr hrs with not more than 4 workshops.

693 Individual Studies in Physical Education U G 1-4

Investigation of selected professional problems.

Su, Au, Wi, Sp Qtrs. Prereq: Grad or sr standing, and permission of adviser.

694 Group Studies in Physical Education U G 1-5

Group studies on special problems in physical education.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

731 Concepts of the Body in Physical Education U G 3

Study of the conceptions of the body that have influenced contemporary views of physical education and its practice. Kleinman.

Wi Qtr. 3 cl.

751 Physical Growth and Motor Development U G 3

Study of growth in phylogenetic and ontogenetic sequence; motor development; critical analysis of research in motor ability, fitness, and athletics, as related to growth and development. Herkowitz.

Au Qtr. 3 cl. Prereq: Grad standing, or permission of instructor.

760 Mechanical Analysis of Motor Skills U G 3

The application of mechanical laws, principles, and formulae to motor skills. Simonian.

Au Qtr. 3 cl. Prereq: 360 or equiv, and Physics 111, or permission of instructor.

770 Outdoor Education and Camp Administration U G 3

Introduction to the principles, status, and administration of outdoor education and camping. Mand.

Au, Sp Qtrs. Prereq: 271, or permission of instructor.

771 Public Recreation: Its Organization and Administration U G 3

Consideration of common patterns of organization of community recreation found in American cities, large and small, under municipal, school, and other auspices.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Sociol 465, or equiv.

789 Practicum in Physical Education U G 2-6

Opportunity is provided for putting educational research and theory into practice by teaching, administration, and agency experience under supervision in university, school, and agency situations.

Au, Wi, Sp Qtrs. 1 arr conf and arr field experience.

Prereq: Permission of instructor and departmental advisor based upon submitted evidence of appropriate knowledge and skill in the selected course. Repeatable to a maximum of 15 cr hrs.

800 Introduction to Exercise Physiology G 4

Introduction to the field of exercise physiology with emphasis on energy liberation factors affecting performance, health, and fitness and physical training.

Au Qtr. 2 1½-hr cl, 1 2-hr lab. Prereq: Physiol 602 or equiv.

801 Exercise Physiology: Metabolism, Temperature, Water and Electrolyte Balances G 4

Continuation of 800. Discussion of metabolism, temperature, water, and electrolyte balances during exercise and of the effects of physical training.

Wi Qtr. 2 2-hr cl. Prereq: 800 and permission of instructor.

802 Exercise Physiology: Cardio-respiratory System, Physical Training, Mucular Strength Training G 4

Continuation of 801. Discussion of cardio-respiratory system during exercise and effects of physical training.

Sp Qtr 2 2-hr cl. Prereq: 801 and permission of instructor.

810 Comparative Physical Education G 3

The current status and practice of physical education in a variety of countries throughout the world with emphasis on schools, universities, and sports clubs. Bennett.

Sp Qtr. 2 1½-hr cl. Not open to students with credit for 840.

811 International Sport G 3

A study of the content and structure of international sports competition and an analysis of the various factors which affect its development. Harper.

Wi Qtr. 2 1½-hr cl. Not open to students with credit for 840.

830 Problems in Interscholastic and Intercollegiate Athletics G 3

The relation of athletics to education; problems of athletic organization; eligibility; finance, current trends and developments in management and purpose; public relations. Nelson.

Su, Wi Qtrs. 3 cl.

831 Instructional Design for Teacher Educators in Physical Education

Classification and analysis of learner outcomes in activity settings; emphasis on empirical methods for analyzing outcomes and alternatives for achieving outcomes in teacher education programs in physical education.

Wi Qtr. 3 cl.

832 Human Movement Theory in Physical Education G 3

A study of the several theoretical conceptions of human movement and their implications for physical education and dance. Kleinman.

Sp Qtr. 3 cl.

841 Physical Education in School and College G 3

Kleinman.

Au Qtr. 3 cl.

842 Seminar in the Role of Sports in Society G 3

Study of the significance of sports in society; and examination of the extent to which sports contribute to human welfare. Nelson.

Sp Qtr. 3 cl. Prereq: Sociol 465, or equiv.

845 Statistics for Physical Education and Health Education G 3

A study of techniques for interpreting research publications in the field, and of statistical procedures useful in analyzing data. Fox.

Au, Wi Qtrs. 3 cl. Prereq: 650; Math 116, 121, or 125; and permission of instructor.

850 Survey of Research in Physical Education G 3

Mathews.

Sp Qtr. 3 cl. Prereq: 885, or equiv.

851 Motor Learning G 3

Critical consideration of research and theory in the acquisition of skill. Special attention is given to major trends in the field. Siedentop.

Wi Qtr. 2 1½-hr cl. Prereq: 441 or equiv, Psych 600, or permission of instructor.

860 Organic Science as Applied to Physical Education and Health Education G 5

A study of the integration of chemistry, biology,

anatomy, physiology to the field of physical education and health education. Bartels.

Sp Qtr. Prereq: 10 cr hrs physiol, 10 cr hrs chem, and 10 cr hrs biol, or equiv.

870 Analysis of Teaching in Physical Education G 3

Analysis of teachers and teaching in physical activity environments; emphasis on critical analysis of research completed and design of future research. Jensen.

Au Qtr. 2 1½-hr cl. Prereq: Ed: C&F 864. Not open to students with credit for 894.03 or 994.03.

871 Behavioral Research Methods for Physical Education and Recreation G 3

Methods of individual organism research as applied to behavioral research problems in physical education and recreation; focus on developing observational competencies and research design skills. Siedentop.

Wi Qtr. 2 1½-hr cl. Prereq: 10 hrs of applied behavior analysis, behavior modification or equivs with written permission of instructor.

872 Advanced Studies in Adapted Physical Education G 3

Examination and assessment of developmental aspects as they relate to physical and motor performance behavior of children with developmental disabilities, mental retardation and learning disabilities. Ersing and Wheeler.

Wi Qtr. 2 1½-hr cl. Prereq: 662 or equiv. Not open to students with credit for 894.02 or 994.02.

873 Problems of Physical Education in Higher Education G 3

A study of the philosophy, purposes, organization and scope of the program of physical education in the college instructional program. Hess.

Au Qtr. 2 1½-hr cl. Prereq: BA or BS degree with major or minor in physical education. Not open to students with credit for 894.04 or 994.04. Designed for students planning to teach physical education in college.

874 Physical Education in Secondary Education G 3

A presentation of new methods and curricula in physical education that are used in exemplary programs at the secondary school level; the process of developing plans and guides in physical education for secondary schools. Coates.

Sp Qtr. 2 1½-hr cl. Prereq: Experience in teaching in school or college. Not open to students with credit for 894.08 or 994.08.

875 Administrative Problems in Physical Education G 3

A study of administrative problems currently confronting chairmen, directors, and deans of organizations involving physical education. Hess.

Wi Qtr. 1 2½-hr cl. Prereq: Experience in teaching in school or college. Not open to students with credit for 894.08 or 994.08.

876 Physical Education in Elementary Education G 3

Study of factors influencing decision making processes in elementary physical education; natures of children, society, knowledge, and learning; roles and responsibilities of teachers; resources and school organization currently available. Gilliom.

Su, Wi Qtrs. 2 1½-hr cl. Prereq: 323 or 541 or permission of instructor. Not open to students with credit for 894.06 or 994.06.

880 Supervision for Teacher Education in Physical Education G 3

Examines clinical models for supervision in physical education with emphasis on data collection techniques to provide feedback to teaching interns. Sp Qtr. 2 1½-hr cl. Prereq: 870.

881 Areas and Facilities in Physical Education G 3

Principles and techniques in determining facility needs, evaluating facilities, planning for new construction and remodeling the areas and facilities for physical education and recreation. Hess and Coates.

Au Qtr. 3 cl.

885 Methods of Research in Health Education and Physical Education G 3

To develop some competency in professional writing and in the use of various research methods applied to health education and physical education. Fox and Mathews.

Au, Sp Qtrs. 3 cl. Prereq: 845.

894 Problems in Physical Education G 3

Advanced problems in physical education, individual or group participation.

894.01 Recreation**894.07 School Evaluation****995 Seminar in Physical Education G 2**

Au, Wi, Sp Qtrs. 2 cl.

996 Seminar in Recreation G 2

Sp Qtr. 2 cl.

999 Research in Physical Education G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Physical Medicine

Office: 1012 Dodd Hall, 472 West 8th Avenue, 422-5184

735 Clinical Physical Medicine and Rehabilitation P 6, 12, 18

Ward experience in restorative procedures on individuals with severe chronic disabilities. Guyton, Johnson, Alexander, Wiechers, Checkles, Waylonis, Earl, Piero, Weber, Powers, and Wolfe.

1, 2, or 3 months; offered all months. Prereq: Permission of instructor.

736 Clinical and Physiologic Bases of Physical Treatment P G 3

The indications for, and choice of, physical modalities. Stow, Johnson, and Weber.

Au Qtr. Prereq: Written permission of instructor.

745 Biophysical Basis of Physical Treatment P 6, 12, 18

The student will design and complete a laboratory or library research problem involving the biophysical aspects of physical diagnosis or treatment. Johnson, Stow, Parker, Piero, and Weber.

1, 2, or 3 months; offered all months. Prereq: Permission of instructor.

750 Natural History of Disability P G 3

An analysis of the nature, patterns and evaluation of

disability, the processes involved, and the factors influencing its course. Checkles, and staff.

Sp Qtr (odd yrs). 3 1-hr cl. Prereq: Grad or professional registration and written permission of instructor.

770 Instrumentation, Neurophysiology, Clinical Aspects of Electromyography P G 3

In-depth study of the instrumentation and correlation of neurophysiology and clinical aspects of electromyography, including excitable membranes, biological potentials, and nerve stimulation in clinical disorders. Wiechers, Johnson, and Stow.

Wi Qtr. Prereq: Resident standing and permission of dept chairman.

780* Psychological Aspects of Physical Disability and its Management by Physicians P G 3

Designed to synthesize and summarize various aspects of advances in the behavioral sciences which have practical application to the rehabilitation of physical disabilities. Vicente.

Sp Qtr. 2 1½-hr cl. Prereq: Resident physician or medical student standing.

799 Residency in Physical Medicine P 18

Rotation through physical medicine and rehabilitation clinical inpatient and outpatient services; consultative, supervisory, and teaching responsibilities in the patient-care team; rounds, conferences, seminars. Johnson, Guyton, Spiegel, Parker, Checkles, Earl, Piero, Waylonis, Powers, Wolfe, Wiechers, Weber, Alexander, Morgan, and Fallon.

Su, Au, Wi, Sp Qtrs. 12 months full time, beginning July 1. Prereq: Appointment as resident, University Hospitals.

993 Individual Studies in Physical Medicine G 3-5

Minor investigations using electrodiagnostic techniques; biophysical, physiologic, and therapeutic effects of physical agents, and other medical rehabilitation techniques. Checkles, Johnson, Parker, Stow, Vicente, Wiechers.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to 15 cr hrs.

999 Research in Physical Medicine and Rehabilitation G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

Physical Sciences, College of Mathematics and

Office: 154 Denney Hall, 164 West 17th Avenue, 422-2874.

180 Uses of Science in Solving Problems of Society U 5

Using examples, it is shown how the methods of science can be used to analyze problems which are of interest to the general public.

Au, Sp Qtrs. 5 cl. Prereq: Placement in Level 4 or higher in the OSU Math Placement Test; 1-5 hr 100-level course in either astronomy, biological sciences, chem, geol&min, or physics.

Physical Therapy

School of Allied Medical Professions

Office: 306 School of Allied Medical Professions
Building, 1583 Perry Street, 422-5921

480 Procedures I U 5

Professional orientation: introduction to the hospital setting and patient care; principles and techniques of basic body mechanics; bandaging and therapeutic massage.

Au, Wi Qtrs. 3 cl, 2 2-hr lab. Prereq: Permission of instructor.

481 Procedures II U 6

Agents used in physical therapy: mechanical and physical properties; therapeutic application and physiological effects related to patients.

Au, Wi Qtrs. 4 cl, 2 2-hr lab. Prereq: Permission of instructor.

482 Procedures III U 4

Evaluation techniques and their usage in physical therapy, posture evaluation, goniometric range of motion recordings, manual muscle testing, functional tests and measurements.

Sp Qtr. 2 cl, 2 2-hr lab. Prereq: Permission of instructor.

495 Medical Kinesiology U 5

Biomechanics and pathomechanics in the analysis of human motion; emphasis on clinical relationships.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: Permission of instructor.

521 Medical Science I U 2 or 3

Principles, clinical aspects, and therapeutic procedures related to selected medical specialties.

Au Qtr. 2 or 3 cl. Prereq: Admission to School of Allied Medical Professions.

522 Medical Science II U 2 or 3

Lectures and clinical presentations giving an orientation to signs, symptoms, and therapeutic management of patients in related medical science fields.

Wi Qtr. 2 or 3 cl. Prereq: Admission to School of Allied Medical Professions.

541 Therapeutic Exercise I U 5

Basic principles and techniques of therapeutic exercise related to physical and medical sciences.

Au Qtr. 3 cl, 2 2-hr lab. Prereq: Permission of instructor.

542 Therapeutic Exercise II U 5

Rehabilitation procedures for maximum restoration of the disabled; functional relationships and principles associated with functional exercise and specialized equipment.

Wi Qtr. 3 cl, 2 2-hr lab. Prereq: Permission of instructor.

543 Therapeutic Exercise III U 5

Theory and technique of exercise for the neurologically handicapped with carry-over into all areas of disability; integration and correlation of therapeutic exercise approaches.

Sp Qtr. 3 cl, 2 2-hr lab. Prereq: Permission of instructor.

585 Physical Therapy Clinical Coordination U 3

Coordination and summary practice of all physical therapy procedures, being determined by the patient diagnosis and medical prescriptions; treatment, records, charts, methods of evaluating and reporting, and clinical affiliation planning.

Wi Qtr. 2 cl, 2 2-hr lab. Prereq: 542 or 407.

588 Professional Administration in Physical Therapy U 5

Integration of theory and professional practice involving administration and supervision skills including interpersonal relationship concepts, oral and written communication analysis, and professional responsibilities and introductory research.

Sp Qtr. 3 cl, 2 2-hr lab. Prereq: Permission of instructor.

595 Seminar U 1-3

Conferences, group discussions, and presentations of selected topics.

Su, Au, Wi, Sp Qtrs. 1-3 cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

597 Clinical Education U 6

Clinical experience in the application of physical therapy techniques under supervision of physical therapists in hospital, community, and other selected facilities.

Su, Au, Wi, Sp Qtrs. 8 hrs per day; 5 days per wk for 3 months. Prereq: Permission of instructor and completion of all required physical therapy professional courses in the curriculum.

Physics

Office: 1012 Alpheus Smith Laboratory of Physics, 174 West 18th Avenue, 422-5713

100 Physics and Man U 5

An introduction to the physics of the world of everyday experience through study of selected topics.

Su, Au, Wi, Sp Qtrs.

100.01 Vibrations and Waves

1 lec; 2 2-hr discussions. Not open to students with credit for the vibrations and waves option of Physics 100.

100.02 Energy

1 lec; 2 2-hr discussions. Not open to students with credit for the energy option of Physics 100.

100.20† Special Topics

1 lec; 2 2-hr discussions.

101 Nature of the Physical World U 5

An elementary description of the physical world emphasizing scientific method and contemporary viewpoints; laboratory work and demonstrations.

Au, Sp Qtrs. 4 cl, 1 2-hr lab.

102 Nature of the Physical World U 5

Continuation of 101.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: 101.

111 General Physics: Mechanics and Heat U 5

Su, Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: Eligibility for Math 150.

112 General Physics: Electricity, Magnetism, and Light U 5

Su, Au, Wi Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 111.

113 General Physics: Modern Physics U 5

Su, Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 112.

131 Introductory Physics: Particles Motion U 5

A presentation of the major concepts of physics from a contemporary point of view, for students majoring in physical sciences, mathematics, or engineering.

Au, Wi, Sp Qtrs. 5 cl, 1 2-hr lab. H131 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 1 entrance unit of physics or chem; prereq or concur Math 151. Not open to students with credit for 231.

132 Introductory Physics: Thermal Physics and Electrostatics U 5

Continuation of 131.

Su, Au, Wi, Sp Qtrs. 5 cl, 1 2-hr lab. H132 (honors) may be available to students enrolled in an honors program or by written permission of dept. Prereq: 131 and Math 151; prereq or concur Math 152. Not open to students with credit for 232.

133 Introductory Physics: Electrodynamics and Quanta U 5

Continuation of 132.

Su, Au, Wi, Sp Qtrs. 5 cl, 1 2-hr lab. H133 (honors) may be available to students enrolled in an honors program or by written permission of dept. Prereq: 132 and Math 152; prereq or concur Math 153, or written permission of instructor. Not open to students with credit for 233.

241 Physical Phenomena U 3

A study of gases, liquids, and solids illustrating the connection between measurements (mechanical, macroscopic) and models (statistical, microscopic) of the properties of matter in bulk.

Au, Sp Qtrs. 3 cl. Prereq: 133 or equiv; Math 153; prereq or concur Math 254. Not open to students with credit for 541.

251 Development of Quantum Physics U 3

Quantum physics, introduced through a study, in historical perspective, of the crucial ideas and experiments that led to the modern conception of the atom.

Su, Wi, Sp Qtrs. 3 cl. Prereq: 133 or equiv; Math 153; prereq or concur Math 254. Not open to students with credit for 551 or 580.01.

294 Group Studies U 1-6

Designed to permit groups of students the opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

435† Intermediate Geometrical Optics U 3

Ray optics of thick lenses, mirrors, prisms, and their combination; apertures and aberrations.

Au Qtr. 3 cl. Prereq: 111, 112, 113, and Math 151. For optomtry students.

436† Intermediate Physical Optics U 3

Wave theory of optical phenomena; applications.

Wi Qtr. 3 cl. Prereq: 111, 112, 113, and Math 151. For optomtry students.

437† Geometrical Optics Laboratory U 2

Selected experiments in geometrical optics.

Au Qtr. 1 4-hr lab. Prereq or concur: 435 or 535. For optomtry students.

438† Physical Optics Laboratory U 2

Selected experiments in physical optics.

Wi Qtr. 1 4-hr lab. Prereq or concur: 436 or 636. For optomtry students.

501 Descriptive Acoustics U G 3

Descriptive non-mathematical treatment of acoustics with applications to music and speech including sources, propagation, reception, characteristics of sound; room acoustics; hearing; apparatus.

Au Qtr. 3 cl. Prereq: Jr standing in music, communic. science education or permission of instructor. Not open to physics majors.

503 General Meteorology U G 5

A description of weather phenomena and the physical processes underlying them; intended primarily for nonphysics majors.

Sp Qtr. Prereq: Either 111, 131, or permission of instructor. Not open to students with credit for 120.

516 Intermediate Physics Laboratory U G 4

Selected intermediate level experiments from basic areas of physics.

Su, Au, Wi, Sp Qtrs. 2 3-hr labs. Prereq: 113 or 133 or permission of instructor. Not open for grad credit to students majoring in physics. Repeatable to a maximum of 12 cr hrs.

525 Dynamical Models I U G 4

Dynamical models of particle motion; behavior of linear systems; periodic and transient phenomena in mechanical and electrical systems; central force problems; frames of reference.

Su, Au, Sp Qtrs. 4 cl. Prereq: 133 and Math 255 or equiv. Not open to students with credit for 521.

555 Fields and Waves I U G 4

Introduction to the description of electrostatic fields; dielectrics; boundary-value problems.

Wi Qtr. 4 cl. Prereq: 525 or equiv; prereq or concur Math 551. Not open to students with credit for 531.

580 Topics in Physics U G 3

Introductory treatment of phenomena and elementary theory of contemporary areas of physics.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 525 or permission of instructor.

580.01 Introduction to Modern Physics

Sp Qtr. Not open to students with credit for 251, 472, 551, or 705.

580.05 Introduction to Nuclear Physics

Au Qtr. Prereq: 580.01 or permission of instructor. Not open to students with credit for 571.

580.06 Introduction to Solid State Physics

Sp Qtr. Prereq: 580.01 or permission of instructor. Not open to students with credit for 661.

580.11 Physics of the Upper Atmosphere

Au Qtr. Prereq: 580.01 or permission of instructor. Not open to students with credit for 651.

580.20 Special Topics

Prereq: 580.01 or permission of instructor. Repeatable to a maximum of 9 cr hrs.

593 Individual Studies U G 2-5

Independent reading, study, or laboratory work at an intermediate level.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

595 Seminar U 1

Discussion of special topics with student participation in the presentation of material.

Su, Au, Wi, Sp Qtrs. Prereq: 131, 132, 133, and Math 254 or equiv. Repeatable to a maximum of 6 cr hrs.

616 Advanced Physics Laboratory U G 4

Experiments selected from all areas of physics; independent work emphasized.

Su, Au, Wi, Sp Qtrs. 2 3-hr labs. Prereq: 241, 251, 525, 555, or permission of instructor. Repeatable to a maximum of 24 cr hrs.

617 Electronics for Physicists U G 5

An intensive introduction to electronic circuits, devices, and instrumentation with emphasis on laboratory experience.

Au, Wi, Sp Qtrs. 2 cl, 2 3-hr labs. Prereq: 525.

626 Dynamical Models II U G 4

Continuation of 525 with development of generalized coordinate representations and equations of motion; systems of particles; coupled systems; wave dynamics.

Su, Wi Qtrs. 4 cl. Prereq: 525; prereq or concur Math 551. Not open to students with credit for 621.

627 Dynamical Models III U G 4

Continuation of 626 with emphasis on systems of particles; classical statistical mechanics and kinetic theory.

Sp Qtr. 4 cl. Prereq: 626 and Math 551.

656 Fields and Waves II U G 4

Continuation of 555; magnetic fields of steady currents; induction; Maxwell's equations; plane waves; special relativity.

Sp Qtr. 4 cl. Prereq: 555 or equiv.

657 Fields and Waves III U G 4

Continuation of 656; plane waves in matter; physical optics; coherence, interference, diffraction, and dispersion.

Au Qtr. 4 cl. Prereq: 656 or equiv. Not open to students with credit for 636.

670† Physics for In-Service Teachers U G 1-15

Designed to deepen teachers' understanding of basic physical concepts and methods of treatment of selected topics; includes lectures, discussions, demonstrations, and individualized laboratory work.

Su, Au, Wi, Sp Qtrs. Prereq: 15 cr hrs in physics and teaching experience; permission of instructor. Intended for secondary school science teachers. Repeatable to a maximum of 30 cr hrs.

693 Individual Studies U G 1-15

Designed to give a properly qualified student opportunity for independent reading, study, or laboratory work in a specialized field of interest.

Su, Au, Wi, Sp Qtrs. Prereq: Satisfactory advanced courses in experimental and theoretical physics and permission of instructor. Repeatable to a maximum of 30 cr hrs.

694 Group Studies U G 1-6

Gives groups of students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Satisfactory advanced courses in experimental and theoretical physics and permission of instructor. Repeatable to a maximum of 15 cr hrs.

705 Structure of Matter I U G 4

Quantum phenomenology; Schrodinger formulation of quantum mechanics; applications to simple systems; one-electron atoms.

Su, Au Qtrs. 4 cl. Prereq: 251, 626, 656, or equiv and Math 255 and 551. Not open to students with credit for 727.

706 Structure of Matter II U G 4

Continuation of 705; magnetic moments and spin; identical particles; many-electron atoms; molecular structure and spectra.

Wi Qtr. 4 cl. Prereq: 705 or equiv. Not open to students with credit for 728.

707 Structure of Matter III U G 4

Continuation of 706; quantum statistics; band theory of solids; interaction of radiation with matter; nuclear and elementary-particle physics.

Sp Qtr. 4 cl. Prereq: 706 or equiv.

743 Thermodynamics U G 4

Modern treatment of topics in physical thermodynamics including entropy, specific heats, third law, and change of phase.

Au Qtr. 4 cl. Prereq: 241 and 627 or equiv.

780 Topics in Contemporary Physics U G 3

Experimental and theoretical aspects of areas of current interest in physics.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 705 or permission of instructor.

780.01† Atomic Spectra and Structure

Not open to students with credit for 751.

780.02 Elementary Particles

Wi Qtr.

780.03† Low-Temperature Physics

Not open to students with credit for 744.

780.04† Molecular Spectra and Structure

Wi Qtr. Not open to students with credit for 757.

780.05† Nuclear Physics

Sp Qtr. Not open to students with credit for 771.

780.06 Solid State

Sp Qtr. Not open to students with credit for 761.

780.07 Plasma Physics

Au Qtr. Not open to students with credit for 775.

780.09† X-Ray Physics

Not open to students with credit for 753.

780.20† Special Topics**795 Special Topics Seminar U G 1**

A survey of current research problems in physics.

Au, Wi Qtrs. Prereq or concur: 705. Repeatable to a maximum of 3 cr hrs.

801 Seminar in Physics G 1

Seminars will be conducted by various members of the staff on topics of current interest in their fields of specialization; students will participate in the presentation and discussion of material.

Su, Au, Wi, Sp Qtrs. Prereq: Acceptable specialized courses and permission of instructor. Repeatable to a maximum of 20 cr hrs.

816 Topics in Physics G 3-6

Laboratory and/or theoretical work on an individual basis on topics of current interest.

Su, Au, Wi, Sp Qtrs. Prereq: 616 or equiv and permission of instructor. Repeatable to a maximum of 30 cr hrs.

821 Advanced Dynamics I G 4

Generalized coordinates, Lagrange's equations, variational principles, linear transformation theory, normal coordinates, small oscillations, Hamilton's equations, and canonical transformations.

Au Qtr. 4 cl. Prereq: 626 or permission of instructor.

822 Advanced Dynamics II G 4

Hamilton-Jacobi theory, tensor algebra and analysis, dynamics of classical fields, elasticity, and hydrodynamics.

Wi Qtr. 4 cl. Prereq: 821.

827 Quantum Mechanics I G 5

Systematic treatment of wave mechanics; symmetries and conservation laws, eigenvalues and eigenfunctions of linear operators, separation of variables, soluble examples, central field problem, angular momentum.

Au Qtr. 5 cl. Prereq: 706 or permission of instructor.

828 Quantum Mechanics II G 5

Theory of scattering, Born approximation; stationary state perturbation theory, WKB approximation, variational method and applications; linear vector spaces, transformations, symmetries.

Wi Qtr. 5 cl. Prereq: 827.

829 Quantum Mechanics III G 5

Time dependent perturbations; applications to scattering and electromagnetic transitions; Pauli spin theory; applications to hydrogen; addition of angular momenta; reflections in space and time.

Sp Qtr. 5 cl. Prereq: 828.

830 Quantum Mechanics IV G 4

Systems with several electrons, exclusion principle; applications to atoms and molecules, and to scattering; Hartree-Fock approximation; Dirac equation for free electrons and for hydrogen.

Au Qtr. 4 cl. Prereq: 829.

831 Advanced Quantum Mechanics G 4

Symmetry groups; Lorentz transformations; field quantization; S-matrix theory; general perturbation theory.

Wi Qtr. 4 cl. Prereq: 830.

834 Electromagnetic Field Theory I G 4

Static electric fields, static and stationary magnetic fields, dielectrics, magnetized bodies; boundary value problems, vector and scalar potential functions; and energy in electric and magnetic fields.

Au Qtr. 4 cl. Prereq: 656 or equiv.

835 Electromagnetic Field Theory II G 4

Maxwell's equations, gauge transformations; superposition, polarization, dispersion and refraction of plane electromagnetic waves; special relativity, covariant formulation of particles and fields, and conservation laws.

Wi Qtr. 4 cl. Prereq: 834 or permission of instructor.

836 Electromagnetic Field Theory III G 4

Radiating systems and diffraction; radiation by moving charges, bremsstrahlung; multipole fields, radiation damping, and scattering and absorption of charged particles.

Sp Qtr. 4 cl. Prereq: 835 or permission of instructor.

847 Statistical Mechanics I G 4

Ensembles in classical and quantum statistical mechanics; density matrix, degenerate Fermi gas; Debye theory of specific heat; black-body radiation; Bose-Einstein condensation.

Wi Qtr. 4 cl. Prereq: 743, 707 or 828 or permission of instructor.

848 Statistical Mechanics II G 4

Cluster and virial expansions; phase transitions; Boltzmann equation and H theorem; transport coefficients; fluctuations and Brownian motion; Onsager relations.

Sp Qtr. 4 cl. Prereq: 847.

880 Advanced Topics G 3

A systematic advanced treatment of areas of current interest in physics; topics will be announced each quarter.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 828 or permission of instructor. Repeatable to a maximum of 9 cr hrs in each decimal subdivision.

880.01† Atomic Spectra and Structure

880.02† Elementary Particle Physics

880.03 Low-Temperature Physics

880.04† Molecular Spectra and Structure

880.05 Nuclear Physics

880.06† Solid State

880.08 Theory of Quantized Fields

880.20 Special Topics

999 Research in Physics G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Physiological Chemistry

Office: 5170 Graves Hall, 333 West 10th Avenue, 422-5451

311 Physiological Chemistry U 4

Human biochemistry with emphasis on metabolism and applications to clinical chemistry and human nutrition; pertinent organic chemistry will be included. Horrocks.

Au Qtr. 4 cl. Prereq: Chem 102 or 122 and enrollment or intended enrollment in a program of the School of Allied Medical Professions.

312 Physiological Chemistry U 4

A continuation of 311. Horrocks.

Wi Qtr. 4 cl. Prereq: 311.

611 Physiological Chemistry U G 3

Chemistry and metabolism of carbohydrates, proteins, lipids, and nucleic acids; basic principles of enzymes, control mechanisms, digestion and absorption. Merola, Sprecher, and staff.

Wi Qtr. 3 cl. Prereq: Chem 242, 244, or 253, 254 or equiv; open to undergrads with permission of instructor. Designed primarily for grad students in medical and biological sciences.

612 Physiological Chemistry U G 3

Continuation of 611. Merola, Sprecher, and staff.

Sp Qtr. 3 cl. Prereq: 611.

613 Physiological Chemistry Laboratory U G 3

Laboratory experiments illustrating principles of biochemistry and acquainting the students with the major experimental techniques of current biochemistry. Nuenke and staff.

Sp Qtr. 1 cl, 2 3-hr lab. Prereq: One qtr of general biochem or physchem.

636 Quantitative Problems in Biochemistry U G 3

Application of elementary physical chemical concepts to the quantitative analysis of biochemical data. Rieske.

Wi Qtr. 3 cl. Prereq: Elementary physical chemistry and biochemistry, or permission of instructor.

641 Dental Biochemistry P 4

Chemistry and metabolism of carbohydrates, lipids, and proteins; digestion and absorption; elements of nutrition as they relate to dentistry, especially mineral and bone metabolism. Panganamala and staff.

Su Qtr. 3 cl, 1 conf. Prereq: Enrollment in College of Dentistry, Chem 242, and either Chem 244, or 246.

642 Dental Biochemistry P 4

Continuation of 641. Panganamala and staff.

Au Qtr. 3 cl, 1 conf. Prereq: 641 and enrollment in College of Dentistry.

701 Biochemical Approach to the Study of Disease P 6

Subcellular organization, model systems in disease, injury and inflammation, toxic agents, deficiency states, genes, enzymes and disease, biochemical changes in growth. Kruger and staff.

1 month, offered Jan and May. Prereq: Permission of instructor.

705 General Biological Chemistry U G 5

An intensive treatment of modern biochemistry; protein structure, enzyme catalyzed reactions, chemistry and metabolism of carbohydrates. Cornwell, Serif, and interdepartmental staff.

Au Qtr. 3 cl. Prereq: Biochem 511 or equiv; Chem 242, 244, or 253, 254; physical chem background of kinetics and thermodynamics or written permission of instructor. Not open to students with credit for Biochem 705. Cross-listed in Biochemistry.

707 General Biological Chemistry U G 5

An intensive treatment of modern biochemistry; energy utilization and electron transport, photosynthesis, membranes and lipid metabolism. Cornwell, Serif, and interdepartmental staff.

Wi Qtr. 3 cl. Prereq: 705 or Biochem 705. Not open to students with credit for Biochem 707. Cross-listed in Biochemistry.

709 General Biological Chemistry U G 5

An intensive treatment of modern biochemistry; intermediary metabolism of amino acids, proteins, and nucleic acids. Cornwell, Serif, and interdepartmental staff.

Sp Qtr. 3 cl. Prereq: 707 or Biochem 707. Not open to students with credit for Biochem 709. Cross-listed in Biochemistry.

793 Individual Studies in Physiological Chemistry P 8, 16, or 24 G 2-15

Qualified students may avail themselves of the facilities of the department for conducting a minor investigation under the direction of a senior staff member.

Su, Au, Wi, Sp Qtrs. 1 or more months for professional credit; offered all months. Prereq: 612 or equiv with

written permission of instructor. Repeatable to a maximum of 15 cr hrs for grad credit or to 24 cr hrs for professional credit.

821†* Physical Biochemistry of Proteins G 3

Protein structure (primary, secondary, tertiary, and quaternary) in the crystal state and in solution and their relationship to function. Alben.

Au Qtr. 3 cl. Prereq: 709 or equiv, or permission of instructor.

822†* Bioenergetics G 3

Flow of energy in biological systems; photosynthesis; oxidative phosphorylation; methods of studying mitochondria, chloroplasts, and other organelles. Brierley.

Wi Qtr. 3 cl. Prereq: 709 or equiv, or permission of instructor.

823* Metabolic Control Mechanisms G 3

Biochemistry of nucleic acids and the genetic code; protein biosynthesis and its control; control of enzymatic reactions and metabolic pathways. Webb.

Au Qtr. 3 cl. Prereq: 709 or equiv, or permission of instructor.

824* Enzymology G 3

Selected topics in structure/function relationships, mechanisms of catalysis, kinetics, and metabolic interrelations of enzyme systems. Richardson.

Sp Qtr. 3 cl. Prereq: 709 or equiv, or permission of instructor.

825* Neurochemistry G 3

Biochemistry and metabolism of the nervous system with discussion of synaptic transmission, memory theories, genetic defects, and associated diseases. Horrocks.

Wi Qtr. 3 cl. Prereq: 709 or equiv, or permission of instructor.

826†* Membranes and Membrane Models G 3

Discussion of the composition, biosynthesis, structure, function, and turnover of membranes, emphasizing the role which lipids play in maintaining membrane function. Cornwell.

Sp Qtr. 3 cl. Prereq: 709 or equiv, or permission of instructor.

830 Physical Methods in Biochemistry G 3

One or more laboratory techniques will be offered, selected from: ultracentrifugation, electrophoresis, spectroscopy, chromatography, and radioisotopic methods. Alben and staff.

Au, Wi, Sp Qtrs. 2 cl, 1 3-hr lab. Prereq: 821 recommended, or written permission of instructor. Repeatable to a maximum of 9 cr hrs.

850 Seminar G 1

Au, Wi, Sp Qtrs. Prereq or concur: 611, or equiv. Repeatable to a maximum of 9 cr hrs.

855 Seminar G 1

Student presentations on current topics in biochemistry.

Au, Wi, Sp Qtrs. Prereq or concur: 611 or equiv. Repeatable to a maximum of 8 cr hrs. Required of all grad students majoring in physchem.

999 Research in Physiological Chemistry G Arr

Research for thesis or dissertation purposes only. Su, Au, Wi, Sp Qtrs.

Physiological Optics

Office: A420 Starling Loving, 338 West 10th Avenue, 422-2647

501 Geometrical Optics U P 5

Paraxial optics, primary optical aberrations, thick lens and mirror systems, ray tracing, field and aperture stops, and prisms.

Au Qtr. 3 cl, 1 4-hr lab. Prereq: Optomtry 1st yr standing or major in phys opt.

502 Physical Optics U P 5

Light sources and spectra; light waves and their interference, diffraction, dispersion, and polarization.

Wi Qtr. 3 cl, 1 4-hr lab. Prereq: 501.

511 Introduction to Physiological Optics I U P G 5

The eye as an optical instrument; the refracting mechanism; the mechanism of accommodation and pupillary contraction; blur of the retinal image; stray light in the eye.

Sp Qtr. 4 cl, 1 2-hr lab. Prereq: 501 and 608. Not for grad credit to students majoring in phys opt.

512 Introduction to Physiological Optics II U P G 5

The motility of the eye; the structure and innervation of the extraocular muscles; the center of rotation; and analysis and description of eye movements.

Au Qtr. 4 cl, 1 2-hr lab. Prereq: 511. Not for grad credit to students majoring in phys opt.

520 Measurement and Specification of Visual Stimuli U P G 4

Light sources; diffusely transmitting and reflecting surfaces and scattering of light by a medium; principles of photometry and colorimetry as applied to visual stimuli.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: Optomtry 2nd yr standing and 511. Not for grad credit to students majoring in phys opt.

531 Basic Human Anatomy U P 5

Basic human developmental, neural, and gross anatomy, using models and films, supplemented with animal demonstrations.

Au Qtr. 3 cl, 2 2-hr lab. Prereq: Optomtry 1st yr standing or major in phys opt.

535 Microscopic Anatomy U P 5

Microscopic anatomy of cells and tissues, and special histology of the organ systems.

Wi Qtr. 3 cl, 2 2-hr lab. Prereq: Optomtry 1st yr standing or major in phys opt.

608 Anatomy of the Eye U P G 5

Human gross anatomy of the head and neck with special emphasis on the eye and orbit; histology and embryology of the eye and associated structures.

Sp Qtr. 3 cl, 2 2-hr lab. Prereq: 1st yr Optomtry or permission of instructor.

613 Intermediate Physiological Optics I U P G 5

Monocular sensory mechanisms of vision; analysis and specification of visual stimuli; photoreception and retinocortical transmission; adaptation of photoreceptors; flicker; brightness discrimination; and color-vision.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: 512.

614 Intermediate Physiological Optics II U P G 3

Circulation and metabolism of the eye; intra-ocular pressure; lacrimal system; movements and functions of the eyelids.

Wi Qtr. 3 cl. Prereq: 512.

693 Individual Studies in Physiological Optics P G 1-15

A properly qualified student may perform a minor investigation or add to his knowledge and technique.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept chairman. Repeatable to a maximum of 15 cr hrs.

715 Intermediate Physiological Optics III P G 5

Projection of visual impressions; the horopter, retinal correspondence; binocular integration of hue and brilliance.

Sp Qtr. 4 cl, 1 2-hr lab. Prereq: Optomtry 2nd yr standing and 613.

716 Intermediate Physiological Optics IV P G 5

Visual perception of color, illumination, figure-ground relations, size, shape, direction, distance, motion, time, and complex patterns.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 715.

730 Principles of Lighting P G 5

The effect of the distribution of light in a given environment upon efficiency, comfort, and safety; selection and arrangement of sources and light control.

Wi Qtr. 3 cl, 1 4-hr lab. Prereq: 716.

731 Vision in Industry P G 5

Visual testing in industry; relation of vision to performing a task; visual requirements for licenses; eye hazards and protection; compensation for loss of vision.

Sp Qtr. 3 cl, 1 4-hr lab. Prereq: 730.

732 Vision in Schools P G 5

Visual survey methods; the prevalence of visual anomalies and eye diseases in children; basic visual skills required in school and methods for their improvement.

Au Qtr. 3 cl, 6 hr lab. Prereq: 730.

780 Topics in Physiological Optics P G 1-5

Experimental and theoretical aspects of areas of current interest in physiological optics.

Su, Au, Wi, Sp Qtrs. 1-5 cl. Prereq: Enrollment in College of Optometry or grad standing in phys opt and permission of dean. Repeatable to a maximum of 30 cr hrs with not more than 5 cr hrs in any one subdivision.

780.01 Ocular Anatomy

780.02 Ocular Physiology

780.03 Corneal Physiology

780.04 Microbiology of the Eye

780.05 Experimental Design

780.06 Psychophysics of Vision

780.07 Paradigm of Physiological Optics

780.08 Ocular Biometrics

780.09 Visual Optics

780.10 Environmental Vision

780.11 Image Evaluation

780.12 Geometrical Optics

780.13 Physical Optics

780.14 Oculomotor Systems

- 780.15 **Binocular Visual Processes**
 780.16 **Monocular Visual Processes**
 780.17 **Photochemistry of Vision**
 780.18 **Color Vision**
 780.19 **Stimulus Specification**
 780.20 **Neurophysiology of Vision**
 780.21 **Visual Electrometrics**
 780.22 **Physiological Optics**

795 Seminar P G 1-5

A series of seminars dealing with new developments in the various phases of physiological optics.

Su, Au, Wi, Sp Qtrs. 1-5 cl. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

801 Advanced Physiological Optics I G 5

The ocular image-forming mechanism; accommodation and pupil contraction, aberrations, stray light entopic phenomena; shape, size, distortion; retinal illuminance and blur.

Au Qtr. 3 cl, 2 2-hr lab. Prereq: 716.

802 Advanced Physiological Optics II G 5

Fixation disparity; photochemistry and electrophysiology of photo-receptors; luminosity; color-mixture; retinal-cortical transmission; simultaneous contrast; visibility; adaptation; after images.

Wi Qtr. 3 cl, 2 2-hr lab. Prereq: 801.

803 Advanced Physiological Optics III G 5

Binocular integration of hue and brilliance, fusional movements, fixation, retinal correspondence, visual perception of figure-ground relations, light, color, illumination, size, shape, direction, distance, and motion.

Sp Qtr. 3 cl, 2 2-hr lab. Prereq: 802.

810 Image Evaluation G 5

An analysis of the causes of image impairment in the human eye and other optical systems; objective methods of assessing aberrations and blur; methods of image enhancement.

Au Qtr. 5 cl. Prereq: 501, 502, and 613.

811 Mechanisms Subserving Color Vision G 5

Theoretical basis for chromatic adaptation, chromatic contrast and induction, color blindness, and other color phenomena; theory of the laws of color mixture.

Wi Qtr. 5 cl. Prereq: 613.

812 Advanced Neurophysiology of the Visual System G 5

The coding and transmission of visual information in the direct and accessory pathways of vertebrates and invertebrates.

Au Qtr. 4 cl, 1 2-hr lab. Prereq: 613, 614, 715, and 716.

813 Advanced Physiology of the Eye G 5

Recent developments in the respiration, metabolism, and mechanics of ocular tissues, and the aqueous dynamics of the eye.

Au Qtr. 4 cl, 1 2-hr lab. Prereq: 613 and 614.

815 Binocular Vision and Perception G 5

Visual perception: direction, space, motion; perceptual adaptation; binocular vision and fusion.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 803.

820 Specification of Visual Stimuli G 5

Study of visual stimuli and apparatus to control parameters such as intensity, spectral composition, retinal location, and pupil size and location; calibration and practical application.

Su Qtr. 3 cl, 4 hr lab. Prereq: 801 or permission of instructor.

894 Group Studies in Physiological Optics G 1-5

Group studies on special problems in physiological optics.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing in phys opt. Repeatable to a maximum of 30 cr hrs.

999 Research in Physiological Optics G Arr

Research for thesis on dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Physiology

Office: 4196 Graves Hall, 333 West 10th Avenue, 422-5448

311 Principles of Human Physiology I U 5

First of a two-quarter sequence covering the following areas of physiology: neuromuscular, heart and circulation, endocrine, brain and special senses, body fluids and kidney, respiration, digestion, temperature control, and metabolism.

Au, Wi Qtrs. 4 cl, 1 2-hr lab. Prereq: 2 qtrs chem, Anatomy 200 or equiv; or permission of instructor. Open only to students in College of Medicine or College of Pharmacy. Credit not given for 311 without 312.

312 Principles of Human Physiology II U 5

Continuation of 311.

Sp, Wi Qtrs. 4 cl, 1 2-hr lab. Prereq: 311 or permission of instructor.

600 Human Physiology for Bio-Medical Engineers U G 4

An introduction to the function of the major human organ systems and the medical aspects of engineering problems for bio-medical engineers.

Au Qtr. 4 cl. Prereq: Grad standing in bio-medical engineering; open to selected 4th yr engr students by permission of instructor.

601 Advanced Mammalian Physiology I U P G 5

First of a two-quarter sequence presenting the following areas of physiology: neuromuscular, heart and circulation, endocrine, brain and special senses, body fluids and kidney, respiration, digestion, temperature control, and metabolism.

Au Qtr. 4 cl, 1 lab. Prereq: Inorganic and organic chem, Physics 111, 112, 113 or equiv, and 1 yr biological sciences, and permission of instructor for undergrads. Credit for 601 not given without 602; not for grad credit to students majoring in physiol; not open to students with credit for 516 or 517.

602 Advanced Mammalian Physiology II U P G 5

Continuation of 601.

Wi Qtr. 4 cl, 1 lab. Prereq: 601. Not for grad credit to students majoring in physiol; not open to students with credit for 517.

604 Advanced Physiology P 5

The cardiovascular system including blood, neuromuscular system, body fluids, and excretion. Au Qtr. 5 cl. Prereq: Open only to students enrolled in the College of Dentistry.

605 Advanced Physiology P 5

The central nervous system and special senses, respiration, digestion, metabolism, the endocrines, and reproduction; continuation of 604. Wi Qtr. 5 cl. Prereq: 604 or permission of instructor.

723 Cellular and Comparative Physiology P G 5

Interaction between cells and their environment at the microscopic, submicroscopic, and molecular levels; regulation and control of protoplasmic functions. Au Qtr. 5 cl. Prereq: 1 yr each of biological sciences, physics, and organic chem, and permission of instructor.

728† Advanced Cellular and General Physiology P G 4

Current concepts of ultrastructures and their function in various protoplasmic systems: membrane phenomena; excitatory process; energy utilization in various kinds of cells.

Sp Qtr. 4 cl. Arr. Prereq: Biology 101 or Botany 110 or Zoology 110 or equiv, Physics 112 or equiv, 2 qtrs Chem 232 or equiv, Chem 531 or equiv, permission of instructor. Not open to students with credit for 628 or 828.

729 Advanced Cellular and General Physiology Laboratory P G 2

Techniques for the study and measurements of phenomena of cellular and general physiological interest and the application of physical and chemical principles of their interpretation.

Sp Qtr. 2-3 hr lab arr. Prereq or concur: 723 or 728.

730† Endocrinology P G 5

A study of functions of the thyroid, parathyroid, pituitary, adrenal, pancreas, gonads, and other organs with possible endocrine functions.

Sp Qtr. 4 cl, 1 lab. Prereq: 311 and 312 or equiv and organic chem or permission of instructor.

746 Radiation Biophysics P G 5

Stable and radioactive isotopes; biological effects of ionizing radiation.

Au Qtr. 5 cl. Prereq: 1 yr each of college biological sciences, math, physics, and physiol and Physchem 601, 602 or 611, 612 or equiv, and permission of instructor. Not open to students with credit for 646 or 846.

748 Physical Instrumentation for Biologists U P G 4

Basic concepts in semiconductor electronics; representative small signal, digital, and integrated circuits, input and output transducers, recording, storage and elementary information processing techniques are studied in the laboratory; emphasis is on representative examples rather than on a comprehensive survey of instruments.

Sp Qtr. 1 cl, 2 3-hr lab. Prereq: 1 yr college biological sciences and physics or permission of instructor.

793 Individual Studies in Physiology U P G 2-18

Reading, conferences, laboratory work by individual arrangement with qualified students who desire more intensive and specialized study than is available in other courses.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs.

801 Seminar in Physiological Research Topics G 1

Formal lectures, seminars and demonstrations by Physiology graduate faculty and visiting scientists, describing and explaining the pertinence of current physiological research.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Grad 1st yr standing in physiol or permission of instructor. Repeatable to a maximum of 3 cr hrs.

835 Advanced Physiology of Organ Systems I G 5

First of a three-quarter sequence presenting an intensive treatment of mammalian organ systems: the cell, the membrane, neuromuscular system, central nervous system, and sense organs.

Au Qtr. 4 cl, 1 lab. Prereq: Inorganic and organic chem, Physics 111, 112, 113 or equiv, 1 yr of biological sciences, or permission of dept chairman. Not open to students with credit for 601-602.

836 Advanced Physiology of Organ Systems II G 5

Continuation of 835; blood, cardiovascular system, fluid compartments, kidney, and temperature regulation.

Wi Qtr. 4 cl, 1 lab. Prereq: 835. Not open to students with credit for 601-602.

837 Advanced Physiology of Organ Systems III G 5

Continuation of 836; respiration, acid-base balance, digestion, metabolism, endocrines, and reproduction.

Sp Qtr. 4 cl, 1 lab. Prereq: 836. Not open to students with credit for 601-602.

850 Seminar in Physiology G 2

Su, Au, Wi, Sp Qtrs. Repeatable.

911 Advanced Studies in Physiology G 3 or 5

Su, Au, Wi, Sp Qtrs. Prereq: 602 or equiv, 826 or equiv, and 837 or equiv. Quarter schedule of topics to be announced.

911.01 Physiology of Nerve and Muscle**911.02 Neurophysiology of Spinal Reflexes**

Grossie.

911.03 Hemodynamics

Pieper.

911.04 Cardian Dynamics**911.05 Peripheral Circulation**

Paul.

911.06 Temperature Regulation**911.07 Blood and Erythropoiesis**

Lessler.

911.08 Comparative—Avian

Weiss.

911.09 Renal Physiology

LeBrie.

911.10 Respiration Mechanics and Gas Exchange

Lipsky.

911.11 Physiological Responses to Altered Blood Gas Concentrations

Smith.

911.12 The Adrenal Hormones

Nishikawara.

911.13 Endocrine Control of Metabolism

Nishikawara.

911.14 Physiology of Reproduction

- 911.15 Gastrointestinal Physiology**
Hanson.
- 911.16 Biological Control Systems**
Kunz.
- 911.17 Advanced Instrumentation**
Stow.
- 911.18 Sensory Electrophysiology**
- 911.19 Limbic Systems Functioning**
Michal.
- 911.20 General Physiology of Protoplasm**
- 911.21 Thyroid Physiology**
Curry-Stokes.
- 911.22 Oral Physiology**
Noyes.
- 911.23 Experimental Neurophysiology**
Curry-Stokes.

999 Research in Physiology G Arr
Research for thesis or dissertation purposes only.

Plant Pathology

Office: 210 Botany and Zoology Building, 1735 Neil Avenue, 422-1375

General Prerequisites for Courses Numbered 300 and 400

Unless otherwise indicated, the prerequisites for 300 and 400-level courses are 90 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-399.

401 General Plant Pathology U 5
An introduction to diseases of plants. Rhodes.
Au, Sp Qtrs. 3 cl, 2 2-hr lab. Prereq: Botany 112. Not open to students with credit for 470.

489 Work Experience in Plant Pathology U 1-3
Supervised practical experience during employment with an approved organization. Work will deal with certain aspects of plant disease control. A final written report is required.
Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs.

510 Forest Pathology U G 3
Major types of forest tree diseases with emphasis on diagnosis, etiology, epidemiology, and control. Rhodes.
Au Qtr. 2 cl, 1 2-hr lab. Prereq: Botany 112 or 500.

General Prerequisites for Courses Numbered 600

Unless otherwise indicated, the prerequisites for 600-level courses are 15 cr hrs in courses in the same discipline numbered 300 or higher, or 10 cr hrs in courses numbered 300 or higher, in the same discipline, plus 10 cr hrs in courses numbered 300 or higher in specified allied disciplines.

601 Advanced Plant Pathology U G 5
An in-depth study of the nature of plant pathogenic fungi and the diseases they cause. Riedel.
Wi Qtr. 3 2-hr cl. Prereq: 401.

610 Diseases of Ornamentals U G 3
A detailed study of important diseases of floral and woody ornamental plants; their cause, distribution, severity, importance, and specific control measure. Ellett.
Wi Qtr. 2 2-hr cl. Prereq: 401. Not open to students with credit for 471.

612 Turfgrass Diseases U G 3
A detailed study of the diseases of turf grasses, factors influencing disease severity, specific measures for disease control. Larsen.
Au Qtr. 2 2-hr cl. Prereq: 401.

615 Economic Plant Pathology U G 3
Major diseases of field, fruit, and vegetable crops with emphasis on etiology, epidemiology, and control. Ellett and Riedel.

615.01† Fruit and Vegetable Crop Diseases
Wi Qtr. 2 2-hr cl. Prereq: 401 or equiv. Not open to students with credit for 671, 672, or 675.

615.02* Field Crop Diseases
Au Qtr. 2 2-hr cl. Prereq: 401 or equiv. Not open to students with credit for 671.

685 Field Plant Pathology U G 2
Study of plant diseases in the field with emphasis on diagnosis and epidemiology; supplementary laboratory work. Rhodes.
Su Qtr. 1 4-hr cl arr. Prereq: 401 or 615, and permission of instructor.

693 Individual Studies U G 1-5
Problems may be selected in the various areas of plant pathology.

Su, Au, Wi, Sp Qtrs. H693 (Honors) may be available to students enrolled in an honors program or eligible for enrollment. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

694 Group Studies U G 2, 3, or 5
Special group studies of a selected area in plant pathology not provided in other courses.
Su, Au, Wi, Sp Qtrs. Prereq: Sr or grad standing. Repeatable to a maximum of 10 cr hrs.

General Prerequisites for Courses Numbered 800 and 900

Unless otherwise indicated, the prerequisites for 800 and 900-level courses are 30 cr hrs in courses in the same discipline, or 20 cr hrs in the same discipline, plus 25 cr hrs in specified allied disciplines.

830†* Physiology of Parasitism G 5
Analysis of physiological and biochemical processes associated with penetration, development of host-parasite relations, and disease development; molecular basis for disease resistance, Garraway.
Wi Qtr. 3 cl, 2 2-hr lab. Prereq: 601 and Biochem 511.

832* Bacterial Plant Pathogens G 3
Representative types of bacterial plant diseases and factors affecting their control, severity, distribution, and economic importance; methods used in studying plant pathogenic bacteria. Larsen.
Wi Qtr. 2 cl, 1 2-hr lab. Prereq: 401, Microbiol 601, and 25 additional cr hrs biological sciences. Not open to students with credit for 872.

834†* Plant Virology G 5
Biology and chemistry of plant viruses; epidemiology and host-virus-vector interactions; methods used in studying plant viruses. Garraway.
Sp Qtr. 3 cl 2 2-hr lab. Prereq: 601. Not open to students with credit for 873.

836* Plant Nematology G 5

Bionomics and taxonomy of nematodes which cause plant diseases; host-parasite interactions; methods used in studying plant parasitic nematodes. Riedel. Au Qtr. 2 cl, 2 2-hr lab, several field trips. Prereq: 601. Not open to students with credit for 874.

861* Physiology of Fungi G 5

The physiology of the nutrition, growth, and reproduction of fungi. Garraway. Wi Qtr. 3 cl, 2 2-hr labs. Prereq: Botany 630, 631 and 660. Not open to students with credit for Botany 861. Cross-listed in Botany.

995 Seminar G 1

Deep. Au, Wi, Sp Qtr. Prereq: Permission of instructor. Repeatable.

999 Research G Arr

Research for thesis or dissertation purposes only. Su, Au, Wi, Sp Qtrs.

Polish

Office: 232 Dieter Cunz Hall of Languages, 1841 Millikin Road, 422-6733

101†* Elementary Polish U 5

Au Qtr. 5 cl. Not open to students with credit for 601.

102†* Elementary Polish U 5

Wi Qtr. 5 cl. Prereq: 101 or equiv. Not open to students with credit for 602.

103†* Intermediate Polish U 5

Sp Qtr. 5 cl. Prereq: 102 or equiv. Not open to students with credit for 603.

104* Intermediate Polish U 5

Au Qtr. 5 cl. Prereq: 103, 112 or equiv with written permission of instructor. Not open to students with credit for 604.

112 Intensive Polish U 5, 10 or 15

Elementary and intermediate Polish for students desiring a comprehensive knowledge of Polish in the shortest possible time. Story.

Su Qtr. 15 cl. Prereq: Written permission of chairman. Students with credit for 101 or the equiv may not register for more than 10 cr hrs. Students with credit for 101 and 102 or the equiv may not register for more than 5 cr hrs. Students with credit for 103 or the equiv may not register for credit. Full time of student and full fees required.

220* Polish Literature in English Translation U 5

Polish literature from the Medieval period to 1864: the Medieval period, Renaissance, Baroque, Classicism, Romanticism; emphasis on Kochanowski, Mickiewicz, Slowacki, Krasinski, and Norwid. Krzyzanowski.

Au Qtr. 4 cl, 1 hr arr. Not open to students with credit for 620.

221* Polish Literature in English Translation U 5

Modern Polish literature from 1864 to the present; emphasis on Positivism, Realism, and Symbolism;

novels of Prus, Sienkiewicz, Zeromski, and Reymont. Krzyzanowski.

Wi Qtr. 4 cl, 1 hr arr. Not open to students with credit for 621.

605* Polish Conversation and Composition U G 5

Reading texts of moderate difficulty, conversation, and simple compositions.

Wi Qtr. 5 cl. Prereq: 104 or permission of instructor.

606* Polish Conversation and Composition U G 5

Reading from modern Polish literature, practice in writing and speaking.

Sp Qtr. 5 cl. Prereq: 605 or permission of instructor.

622†* Contemporary Polish Literature U G 5

Prose and poetry since 1945; emphasis on Borowski, Brandys, Slonimski, Andrzejewski, Dabrowska, Hlasko, Iwaskiewicz, Stawinski, and Rozewicz.

Sp Qtr. 3 cl. Not open to students with credit for 722.

693 Individual Studies U G 2-10

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept chairman. Each decimal subdivision repeatable to a maximum of 20 cr hrs.

693.01 Literature to 1820**693.02 Literature 1820-1860****693.03 Literature after 1860****693.04 Morphology****693.05 Phonology****693.06 Dialectology****693.07 Old Polish****693.08 Unspecified****694 Group Studies U G 2-10**

Au, Wi, Sp Qtrs. Prereq: Permission of chairman. Repeatable to a maximum of 15 cr hrs.

821†* Structure of Polish G 5

Analysis and description of the phonological and morphological systems of contemporary standard Polish.

Sp Qtr. 3 cl. Prereq: 606 or permission of instructor.

830†* Mickiewicz and Romanticism G 5

Critical analysis of the major works of Polish Romantic poetry and drama; emphasis on Mickiewicz's poems, dramas, and criticism.

Au Qtr. 3 cl. Prereq: 2nd yr grad standing or permission of instructor.

831†* Age of Realism G 5

Fiction of the second half of the 19th century; emphasis on Sienkiewicz and Prus; intellectual and literary development.

Wi Qtr. 3 cl. Prereq: 2nd yr grad standing or permission of instructor.

832†* Twentieth Century Polish Writers to 1939 G 5

Fiction, poetry, and drama, from the Neo-Romantic period to World War II; emphasis on Zeromski, Reymont, and Wyspianski.

Sp Qtr. 3 cl. Prereq: 2nd yr grad standing or permission of instructor.

852 Seminar in Polish Literature G 5

Sp Qtr. 2 cl. Prereq: 622 or 722 or equiv with written permission of instructor. Repeatable to a maximum of 15 cr hrs.

894 Group Studies G 2-10

Au, Wi, Sp Qtr. Prereq: Written permission of chairman. Repeatable to a maximum of 15 cr hrs.

993 Individual Studies G 2-10

Su, Au, Wi, Sp Qtr. Prereq: Permission of chairman. Repeatable to a maximum of 40 cr hrs in any combination of decimal subdivisions.

- 993.01 Literature to 1820
- 993.02 Literature 1820-1860
- 993.03 Literature after 1860
- 993.04 Morphology
- 993.05 Phonology
- 993.06 Dialectology
- 993.07 Old Polish
- 993.08 Unspecified

Political Science

Office: 223 Derby Hall, 154 North Oval Mall, 422-2881

101 Introduction to American Politics U 5

Introduction to American politics, the institutions and processes which create public policy, the strengths and weaknesses of the American political systems.

Su, Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 100 or 300.

105 World Problems U 5

Consideration of the major problems facing people, such as poverty, food, war, health, environment, population, human rights; discussion of possible political solutions.

Su, Au, Wi, Sp Qtrs. 5 cl.

165 Introduction to Politics U 5

Introduction to politics: political issues, political power, democracy, authoritarianism and totalitarianism, basic political institutions, political ideas, and global politics.

Su, Au, Wi, Sp Qtrs. 5 cl. H165 (honors) may be available to students enrolled in an honors program or by permission of dept. Not open to students with credit for 201, 202, 203, or 265.

201 The Individual in Politics U 5

Focus on concepts such as attitude, role, and group and their application in such areas as voting behavior and political participation.

Su, Au, Wi, Sp Qtrs. 5 cl. H201(honors) may be available to students enrolled in an honors program or by permission of dept.

202 Politics in Contemporary Societies U 5

The politics of contemporary nations, including such topics as political change, party systems, issues in post-industrial societies, political violence, conflict resolution, and policy-making.

Au, Wi, Sp Qtrs. 5 cl. H202(honors) may be available to students enrolled in an honors program or by permission of dept.

210 Modern Political Ideologies U 5

Introductory survey of modern political ideologies: capitalism, socialism, communism, anarchism, fascism; consideration of both the justifications of ideologies and their implications for political life.

Au, Wi, Sp Qtrs 5 cl.

215 American Foreign Policy U 5

An examination of American foreign policy from World War II to the present; consideration of external and domestic influences on American foreign policy behavior.

Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 656.

294 Group Studies U 5

Au, Wi, Sp Qtrs. 5 cl. Repeatable to a maximum of 10 cr hrs.

300 American Politics and Policy-Making U 5

An examination of American political institutions and the policy-making process.

Su, Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 101.

345 Interpreting International Politics U 5

An examination of the nature and determinants of major phenomena in international politics such as crises, alliances, integration, interdependence, subversion, war and conflict resolution processes.

Su, Au, Wi, Sp Qtrs. 5 cl.

501 The American Presidency U G 5

An examination of the American presidency, emphasizing the contemporary role of the president, the institutionalized presidency, and theories of presidential behavior.

Su, Au Qtrs. 5 cl.

502 Campaign Politics U G 5

The organization and strategy of American political campaigns; practical politics seen in the light of knowledge about political behavior and public opinion.

Au Qtr. 5 cl.

503 Public Opinion and the Polls U G 5

Covers what Americans think about major issues of the times and how polls are conducted and evaluated.

Wi Qtr. 5 cl.

504 Black Politics U 5

Economic, political, and social constraints on the development of black political power; the efforts made by black people in recent times to organize for effective political action.

Au Qtr. 5 cl. Not open to students with credit for 208 or Black St 504. Cross-listed in Black Studies.

505 Urban Government U G 5

Introduction to the governance of urban communities in the United States.

Au, Wi Qtrs. 5 cl.

506† Ohio Politics U G 5

Examination of state politics with special reference to Ohio.

Sp Qtr. 5 cl.

512 Women and Politics U G 5

An examination of women's participation in political activity, including changes over time in women's political roles and comparison with the roles of men.

Wi Qtr. 5 cl.

514 Women and the Law U G 5

An examination of the legal status of women and the ways in which law affects the situation of women in American society.

Sp Qtr. 5 cl.

516 Judicial Politics U G 5

Analysis of the roles of judges and lawyers as participants in the American political process; analysis of courts as political institutions.

Au Qtr. 5 cl.

519 Civil Liberties in the Courts U G 5

An examination of civil liberties decisions by American courts, their legal and political bases, and their effects on government and society.

Wi Qtr. 5 cl.

530 Government and Politics of the Communist World U G 5

Systematic comparison of central political processes within communist systems: elite recruitment, coalition behavior, conflict resolution, role of intellectuals, social policy and mass mobilization.

Au Qtr. 5 cl.

535 Government and Politics of the Industrialized World U G 5

Analyses of politics of the United States, Western Europe and Japan regarding contemporary problems of inequality, regime instability and conflict, value change and the environment.

Au Qtr. 5 cl.

541 Government and Politics of the Third World U G 5

A general introduction to the theoretical and substantive literature dealing with the historical development and contemporary characteristics of the new states of Asia and Africa.

Wi Qtr. 5 cl.

542 Topics in Cross-National Analysis U G 5

Topics in cross-national analysis such as elites, public opinion, political parties will be addressed.

Sp Qtr. 5 cl. Repeatable to a maximum of 10 cr hrs.

551 The United Nations System in Global Problem Solving U G 5

Activities and potential of the United Nations system in promoting economic well-being, environmental management, resource sharing, social justice, and control of violence.

Wi Qtr. 5 cl. Not open to students with credit for 651.

560† Regional Patterns in International Politics U G 5

Examination of ideological, institutional, and foreign political patterns in particularized regions, such as Sub-Sahara Africa, Arab Middle East, Southeast Asia.

Sp Qtr. 5 cl. Repeatable to a maximum of 15 cr hrs.

562† Regional Patterns in International Politics: Latin America U G 5

Basic power concepts, political institutions, and international relations of Latin America.

Wi Qtr. 5 cl.

570 Alternative World Futures U G 5

Examines forecasts of the future made by computer simulation, and by philosophers and science fiction writers; discusses ways to change the future through political means.

Wi Qtr. 5 cl.

571 Political Theories of Democracy U G 5

An examination of theories of democracy, focusing on normative and descriptive dilemmas such as participation versus liberty in democratic societies.

Au Qtr. 5 cl.

573† American Political Ideas U G 5

An analysis of American ideas on law and government, authority and liberty, oligarchy and democracy.

Wi Qtr. 5 cl.

575 Political Analysis U G 5

Principles and problems of explaining and evaluating political institution, policies, and behavior; critical analyses of major theories of political action.

Wi Qtr. 5 cl. Not open to students with credit for 203.

578 Political Decision-Making and Public Policy U G 5

Comparative analysis of decision making processes of contemporary nations considering the welfare, education, economic and environmental policy arenas.

Wi Qtr. 5 cl.

585 Techniques of Political Analysis U 5

Introduction to research design, nature of data, its generation and machine analysis; analysis of political variables.

Wi Qtr. 5 cl.

593 Individual Studies U G 1-15

Students will devote their time to special projects including papers, exams, and practical political experience.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 15 cr hrs.

General Prerequisites for Courses Numbered 600 and 700

Unless otherwise indicated the prerequisites for 600 and 700-level courses are two courses in political science, or a declared major in another social science, or the consent of the instructor, or the history and social science requirements of the BA curriculum.

604 American State Politics U G 5

Comparative analysis of politics in the American states.

Sp Qtr. 5 cl. Not open to students with credit for 605.

608* Ethnic Politics in the American Cities U G 5

Group conflict along ethnic lines in major American cities: factors contributing to group cohesion in politics; strategies and resources for exercising power through collective political action.

Wi Qtr. 5 cl.

610 Executive and Bureaucratic Politics U G 5

Introduction to the roles and behavior of executives and bureaucrats in the formulation and implementation of public policy in the United States.

Sp Qtr. 5 cl.

614* Urban Politics U G 5

The study of political problems facing the cities: including community power, poverty, welfare, urban renewal, urban education, law enforcement, and violence.

Wi Qtr. 5 cl.

617 Legislative Politics and Policy-Making U G 5

Studies of legislative organization, practices, and recruitment, and their relation to the policy outputs; relationships of the legislature to other elements of the American political system.

Au Qtr. 5 cl.

626† British Government and Politics U G 5 217

An analysis of the nature of politics and the conduct of government in contemporary Britain, including the making of foreign policy.
Wi Qtr. 5 cl.

627 Government of Western Europe U G 5

An examination of the political institutions and processes of France, West Germany, and the European integration movement.
Au Qtr. 5 cl.

629 Analysis of 20th Century Problems in Cross-National Perspective U G 5

Studies of contemporary political phenomena from a comparative perspective, including instability-stability in parliamentary systems, revolution, urban and local politics, national integration, and other topics.

Sp Qtr. Repeatable to a maximum of 15 cr hrs.

630 The Soviet Union U G 5

A general study of the Soviet Union; governmental and party institutions; ideology and methods; problems of communist dictatorship.

Sp Qtr. 5 cl.

631† Survey of the Social Sciences in the USSR U G 5 217

An introduction to bibliography and methodology of the social sciences in the USSR.

Wi Qtr. 3 cl. Prereq: 4th yr standing or grad standing or enrollment in Certificate Program for Translators.

635 Government and Politics of Japan U G 5

The government and politics of Japan, with special emphasis being given to the impact of cultural and social patterns on the processes of government with imported political institutions.

Sp Qtr. 5 cl.

636 Southeast Asia U G 5

Governments and politics of the Philippines, Indonesia, Indo-China, Malaysia, Thailand, and Burma; contemporary problems of this region in relation to world politics.

Au Qtr. 5 cl.

637 Government and Politics of China U G 5

A study of the contemporary political process of Communist China; considerable time will be spent on an analysis of recent political change in China and the process of revolution.

Wi Qtr. 5 cl.

640† Latin American Government and Politics U G 5

A study of political processes, institutions, and groups in Latin America, with emphasis on constitutional, geographical, social, and economic environment in which they operate.

Au Qtr. 5 cl.

650* International Law U G 5

A study of the principles of international law.

Sp Qtr. 5 cl.

655 Soviet Foreign Policy U G 5

Basic concepts about, and choices in, Soviet foreign policy; development and presentation of patterns of Soviet relations with key nations; major problems in future relationships.

Wi Qtr. 5 cl.

658 International Relations of the Far East U G 5

The Far East in contemporary world politics; factors underlying the foreign policies of the nations concerned with this region.

Sp Qtr. 5 cl.

670 History of Political Theory: Plato to Machiavelli U G 5

The study of major works by political theorists, including Plato, Aristotle, Cicero, Augustine, Aquinas, Machiavelli, and others, in ancient and medieval times.

Au Qtr. 5 cl.

671 History of Political Theory: Machiavelli to Hegel U G 5

The study of major works by political theorists, including Machiavelli, Hobbes, Locke, Hume, Montesquieu, Rousseau, Hegel, and others, from the Renaissance into the 18th century.

Wi Qtr. 5 cl.

672 History of Political Theory: Hegel to the Present U G 5

The study of major works by political theorists, including Bentham, Kant, Hegel, Marx, Mill, Weber, and others, since the French Revolution.

Sp Qtr. 5 cl.

674 Political Participation and Voting Behavior U G 5

A study of political participation and its correlates, determinants of the vote decision, analysis of recent American elections.

Au Qtr. 5 cl.

675 American Political Parties U G 5

Theories of political parties, party organization, individual voting behavior, nomination and electoral politics, the party in government.

Au, Sp Qtrs. 5 cl.

679 Policy Analysis U G 5

An analysis of the policy process emphasizing the determinants of public policy, theories of public choice, and the implementation, impact, and evaluation of policy decisions.

Wi Qtr. 5 cl.

684 Introduction to Political Science Research Methods U G 5

Introduction to political science research with emphasis on survey and experimental designs, data generation techniques, data processing, and computer utilization.

Au Qtr. 5 cl.

685 Methods of Quantitative Analysis: Elementary U G 5

Explication, interpretation, and application of techniques for quantitative analysis of political data; descriptive and inferential statistics, with emphasis on bivariate analysis.

Wi Qtr. 5 cl.

686 Methods of Quantitative Analysis: Intermediate U G 5

Descriptive and inferential statistics with emphasis on multivariate analysis; additional topics offered as desired and possible: scaling, index construction, sampling, measurement reliability.

Sp Qtr. 5 cl. Prereq: 685.

693 Individual Studies U G 1-5

A special topic is assigned to each student and results are tested by papers and special examinations.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing and 40 cr hrs in social sciences, including 15 cr hrs in polit sc. Repeatable to a maximum of 20 cr hrs.

694 Contemporary Political Problems U G 3-5

Sp Qtr. Prereq: Sr standing and 15 cr hrs in polit sc. Repeatable to a maximum of 30 cr hrs.

700 Basic Theories in the Study of American Politics U G 5

Examination of basic concepts and approaches; consideration of methodological and substantive problems encountered at various levels of analysis.

Au Qtr. 2-2-hr cl. Repeatable to a maximum of 10 cr hrs.

Introduction to National Security

See Nat Sec Pol S 702.

702 Public Opinion and Political Behavior: Psychological Foundations U G 5

The formation, organization, and change of attitudes about American politics; methods of survey design and analysis including computer adaptations.

Au Qtr. 5 cl. Not open to students with credit for 602.

703 Readings in Individual Political Behavior U G 5

Intensive analysis of literature on selected topics such as socialization, cognition, groups, and attitudes.

Au Qtr. 2-2-hr cl. Repeatable to a maximum of 10 cr hrs.

704† Readings in State and Local Politics U G 5

Intensive review of selected aspects of the literature on state and local politics in the United States.

Au Qtr. 2-2-hr cl. Prereq: 604 or 614 or equiv. Repeatable to a maximum of 10 cr hrs.

713 Readings in Executive and Bureaucratic Politics U G 5

Intensive examination of literature with emphasis on the role of executives and bureaucrats in the formulation and implementation of public policy.

Su Qtr. 2-2-hr cl. Prereq: 610 or equiv. Repeatable to a maximum of 10 cr hrs.

717 Readings in Legislative Politics and Policy-Making U G 5

A theoretical-empirical analysis of the functioning and policy product of American legislatures; intensive reviews of selected aspects of the legislative literature to be conducted.

Wi Qtr. 2-2-hr cl. Prereq: 617 or equiv. Repeatable to a maximum of 10 cr hrs.

725 Basic Theories in the Study of Comparative Government U G 5

Examination of such concepts and theories as structural-functional analysis; general systems theory; and sociocultural systems as determinants of governmental structures.

Au, Sp Qtrs. 3 cl. Repeatable to a maximum of 15 cr hrs.

727 Problems in Western European Politics U G 5

Intensive study of selected problems.

Wi Qtr. 1-2-hr cl. Prereq: 626 or 627 or permission of instructor.

731 Problems in Soviet Politics U G 5

An intensive examination of selected problems such as crises of succession, conflicts of pressure groups, Soviet policies in the United States, Sino-Soviet relations.

Sp Qtr. 3 cl. Prereq: 630 or 655.

734 Problems in Asian Politics U G 5

An advanced seminar for the purpose of structured reading of advanced scholarly materials and limited research experimentation in East and Southeast Asian topics.

Wi Qtr. 1-2-hr cl. Prereq: 635 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

740† Problems in Latin American Politics U G 5

An advanced seminar devoted to a structured examination of the major theories, concepts, and approaches used in the analysis of Latin American politics.

Sp Qtr. 1-3-hr cl. Prereq: 562 or 640 or permission of instructor.

741 Political Development U G 5

Theories, approaches, and methodology in the analysis of political life in the new states of Asia and Africa; discussion of selected case and cross-national studies with theoretical relevance.

Sp Qtr. 3 cl. Prereq: 541 or 636 or 640 or permission of instructor.

745 Basic Theories in the Study of International Politics U G 5

Examination of such basic concepts and theories as equilibrium models, balance of power, national interest, geopolitical configurations.

Au Qtr. 2-3-hr cl.

746 Synthesizing International Politics Scholarship U G 5

Synthesis of international politics research and writings, intended for advanced graduate students.

Wi Qtr. 2-2-hr cl.

747 Research Methods in International Politics U G 5

Examines a number of research techniques and approaches common in international politics such as content analysis, simulation, mathematical modeling and factor analysis.

Sp Qtr. 2-2-hr cl.

749 Topics in Cross-National Policy Analysis U G 5

A comparative examination of substantive cross-national policy issues such as welfare, security, economic development, etc.

Wi Qtr. 3 cl. Prereq: 745.

750 Policy Management in International Politics U G 5

Analyzes such subjects as forecasting, social indicators, social engineering, needs assessment and goal-setting from the perspective of the strategic and executive functions of policy making.

Sp Qtr. 2-2-hr cl.

751 Conflict and Peace U G 5

Sources and types of social conflict with special attention to international violence; causes of war, their avoidance and control.

Sp Qtr. 2-2-hr cl.

755 American Foreign Policy Making U G 5

An examination of various approaches used to explain American foreign policy behavior including the rational actor, policy process, and bureaucratic politics models.

Wi Qtr. 2 2-hr cl.

756 Foreign Policy Design U G 5

Problems of designing foreign policy including organizational, contextual, economic, and public opinion constraints; how to create an information retrieval system to aid decision making.

Wi Qtr. 2 2-hr cl.

757* Comparative Foreign Policies U G 5

Examines comparatively the sources and classes of behavior of territorial actors in the international political system.

Wi Qtr. 2 2-hr cl.

758 Regional Integration U G 5

Political trends in and consequences of regional organization.

Wi Qtr. 2 2-hr cl.

759 International Organization U G 5

Comprehensive view of international governmental, non-governmental, and business organizations; their roles in solving problems such as poverty, war, pollution; particular attention to the U.N. system.

Wi Qtr. 2 2-hr cl.

760 Transnational Relations U G 5

Comprehensive view of nongovernmental relations (trade, agriculture, science, religion, health, labor) between people in different nation-states with particular attention to opportunities for increased citizen control.

Wi Qtr. 2 2-hr cl.

762 Theory and Explanation in Political Science U G 5

A survey of topics in the methodology and philosophy of social science including: logic, conceptualization, explanation, theory; applications to criticism in political science.

Au Qtr. 5 cl. Not open to students with credit for 665.

764 Democratic Theory U G 5

Seminar will consider democratic theorists, classical and contemporary; relations between democratic theory, social choice theories and empirical studies of modern democracies.

Sp Qtr. 2 2-hr cl.

766 Selected Topics in Political Theory U G 5

Intensive joint readings and discussions concentrating upon one of the major themes, problems, or movements in political theory; topic information available from instructor.

Wi Qtr. 1 2-hr cl. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 15 cr hrs.

767 Explanation and Evaluation U G 5

Critical inquiry into the role of political theories in explanation and evaluation of political life.

Sp Qtr. 2 2-hr cl. Prereq: 762 or permission of instructor.

768 Political Theory and Conceptual Analysis U G 5

Critical examination of the contribution of conceptual analysis to the understanding of existing theories and the creation of new ones.

Au Qtr. 2 2-hr cl. Prereq: 790 or equiv.

774 Readings in Political Participation and Voting Behavior U G 5

Intensive examination of literature on selected topics in the area of participation and voting behavior in the United States.

Wi Qtr. 2 2-hr cl. Prereq: 674 or equiv. Repeatable to a maximum of 10 cr hrs.

775 Readings in American Political Parties U G 5

Intensive study of literature or selected aspects of American political parties.

Sp Qtr. 3 cl. Repeatable to a maximum of 10 cr hrs.

776 Comparative Political Institutions U G 5

Study of comparative political institutions (executives, legislatures, bureaucracies, constitutions) utilizing a broad cross-national perspective.

Wi Qtr. 3 cl.

777 Comparative Political Behavior U G 5

A cross-national examination of political behavior, including such topics as socialization, participation, voting, elite behavior, mass-elite linkages.

Au Qtr. 3 cl.

778 Comparative Political Parties and Interest Groups U G 5

Comparative analysis of the nature and role of political parties and interest groups in contemporary societies.

Au Qtr. 3 cl.

779 Readings on the Policy Process U G 5

Consideration of the basic theories, concepts, and techniques used in the policy analysis; the determinants of public policy; and the impact and evaluation of public policy.

Sp Qtr. 2 2-hr cl. Repeatable to a maximum of 10 cr hrs.

H783 Honors Course U 3-5

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing and 40 cr hrs in social sciences, including 15 cr hrs in polit sc with a record of A in at least half of the polit sc courses and an average of B in the remainder. Permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degree BA with distinction in polit sc. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs. A special topic is assigned to each student and results are tested by the requirement of papers and special examinations.

Research Principles and Techniques in National Security

See Nat Sec Pol S 785.

786 Causal Analysis U G 5

Analysis of causal models by Simon-Blalock techniques, recursive and nonrecursive path estimation; special topics include measurement error, standardization, and ordinal data.

Sp Qtr. 2 2-hr cl. Prereq: 685 and 686.

787† Dimensional Analysis U G 5

Topics include measurement and data theory, unfolding, proximity and dominance (Guttman) scaling, multidimensional scaling, and factor analysis.

Sp Qtr. 2 2-hr cl. Prereq: 685 and 686.

788 Mathematical Theories of Politics U G 5

Introduction to various major mathematical theories of political phenomena and the role of formal analysis in political science.

Au Qtr. 2 2-hr cl. Prereq: 790 or equiv.

790 Scope and Methods of Political Science U G 5

An introduction to political science as a scholarly discipline; examination of trends, concepts, and scientific foundations; an overview of theory building and theory testing.

Au Qtr. 1 2-hr cl, 1 1-hr cl. Prereq: 4th yr standing and 15 cr hrs in polit sc. Repeatable to a maximum of 10 cr hrs.

General Prerequisites for Courses Numbered 800 and 900

A general foundation in undergraduate courses in history and the social sciences is assumed. Any of the 800-level courses listed may be repeated provided that no student shall earn more than 10 hours of credit in any single course.

Seminar in National Security Research

See Nat Sec Pol S 801.

803 Research in Public Opinion G 5

Development and execution of a research design focusing on a problem in American public opinion; consultation on substantive and methodological problems offered by instructor.

Sp Qtr. 1 2-hr cl. Prereq: 702 or permission of instructor.

804 Research on State and Local Politics G 5

Development and execution of a research design on a selected topic in American state or local politics; consultation on substantive and methodological problems offered by instructor.

Au Qtr. 1 2-hr cl.

813 Research on Executive and Bureaucratic Politics G 5

Development and execution of a research design focusing on a problem in American executive and bureaucratic politics; consultation with instructor on substantive and methodological problems.

Wi Qtr. 1 2-hr cl.

817 Research in Legislative Politics and Policy-Making G 5

Development and execution of a research design focusing on a particular problem in American legislative research; consultation on substantive and methodological problems offered by instructor.

Sp Qtr. 1 2-hr cl. Prereq: 717 or equiv.

826 Comparative Government G 3-5

Seminar in the governments of foreign countries.

Sp Qtr. 1 2-hr cl. Prereq: 2 polit sc courses in foreign governments at 600 level or above, or equiv. Repeatable to a maximum of 15 cr hrs.

846 Research in International Politics G 3-5

Research seminar in international politics.

Au Qtr. 1 2-hr cl. Repeatable to a maximum of 15 cr hrs.

866 Topics in Political Theory G 5

Intensive treatment of selected topics and texts in political theory and theory construction.

Wi Qtr. 1 2-hr cl. Repeatable to a maximum of 10 cr hrs.

867 Research in Mathematical Political Theory G 5

Design and execution of research focusing on a problem in mathematical political theory.

Wi Qtr. 2 2-hr cl. Prereq: 788 or permission of instructor. Not open to students with credit for 666.

874 Research in Political Participation and Voting Behavior G 5

Development and execution of a research design focusing on a problem in electoral research; extensive consultation with instructor on substantive and methodological aspects of the problem.

Sp Qtr. 1 2-hr cl. Prereq: 774 or equiv.

875† Research on American Political Parties G 5

Development and execution of a research design focusing on a problem relating to American political parties; consultation on substantive and methodological problems offered by instructor.

Su, Sp Qtrs. 1 2-hr cl.

879† Research on Policy-Making G 5

Research into the process of policy-making and the substance of public policy; consultation on substantive and methodological problems offered by instructor.

Au Qtr. 1 2-hr cl.

894 Group Studies: Contemporary Political Problems G 5

Group studies to examine specific contemporary political problems.

Su, Au, Wi, Sp Qtrs. 5 cl. Repeatable to a maximum of 30 cr hrs.

899 Interdepartmental Seminar G 1-5

See Interdepartmental Seminars.

Su, Au, Wi, Sp Qtrs.

999 Research in Political Science G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Portuguese

Office: 248 Dieter Cunz Hall of Languages, 1841 Millikin Road, 422-5842

101 Elementary Portuguese U 5

Elements of Portuguese grammar, with oral and written exercises; attention to ear training and oral practice; and customs. Redenbarger.

Au Qtr. 5 cl.

102 Elementary Portuguese U 5

The elements of Portuguese grammar with abundant oral and written exercises; development of conversational skill; reading, vocabulary building. Redenbarger.

Wi Qtr. 5 cl. Prereq: 101.

103 Intermediate Portuguese U 5

Continuation of Portuguese grammar; reading of short stories, plays, and novels; increased attention to development of oral proficiency. Redenbarger.

Sp Qtr. 5 cl. Prereq: 102 or 110.

104 Intermediate Portuguese U 5

Reading of Portuguese plays, short stories, and novels; emphasis on oral practice; non-fiction of cultural and historical significance. Redenbarger. Au Qtr. 5 cl. Prereq: 103 or 112.

110† Intensive Elementary Portuguese U 5 or 10

Elementary Portuguese for students wishing to acquire the basic skills in one quarter; intensive drill in form, syntax, vocabulary, and idiom; equivalent to 101 and 102. Redenbarger.

Wi Qtr. 10 cl. Prereq: Permission of dept. Not open to students with credit for 102. Students with credit for 101 or the equiv may not register for more than 5 cr hrs.

112 Intensive Portuguese U 5, 10, 15

Elementary and intermediate Portuguese; intensive drill in forms, syntax, vocabulary, and idiom; reading of short stories and plays in Portuguese. Redenbarger.

Su Qtr. 15 cl. Enrollment limited to 20 students. Full time of student and full fees required. Prereq: Permission of dept. Equiv of 101, 102, and 103. Students with credit for 101 or the equiv may not register for more than 10 cr hrs. Students with credit for 101 and 102 or the equiv may not register for more than 5 cr hrs. Students with credit for 103 or the equiv may not register for credit.

202† Portuguese Conversation and Composition U 5

Intensive practice in conversation and composition based on materials concerning current life in Brazil and Portugal, with thorough review of grammar.

Wi Qtr. 5 cl. Prereq: 104 or permission of instructor.

271† Luso-Brazilian Literature in English Translation U 3

Sp Qtr. 3 cl. Prereq: Engl 100 or equiv.

293† Individual Studies U 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 cr hrs.

294† Group Studies U 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 cr hrs.

401 Review Grammar and Composition U 3

Review of Portuguese grammar; compositions based on readings. Redenbarger.

Wi Qtr. 3 cl. Prereq: 104.

404†* Portuguese Pronunciation U 5

Practice with corrective exercises to continue development of aural-oral skills.

Wi Qtr. 5 cl. Prereq: 104.

421† Introduction to Modern Luso-Brazilian Literature U 5

Reading and discussion of important modern Portuguese and Brazilian literary works.

Au Qtr. 5 cl. Prereq: 104.

422† Modern Prose Fiction U 5

Representative readings of modern Portuguese and Brazilian novels and short stories.

Wi Qtr. Prereq: 421 or permission of instructor.

423† Modern Poetry and Drama U 5

Representative readings from modern Luso-Brazilian poetry and drama; lectures, discussions, and reports.

Sp Qtr. Prereq: 421 or permission of instructor.

620* Main Currents in the Development of Portuguese Literature U G 5

Portuguese literature from the Middle Ages to the present with emphasis on the evolution of major movements. Redenbarger.

Au Qtr. 5 cl. Prereq: 421, and 422 or 423, or permission of instructor.

621* Main Currents in the Development of Brazilian Literature U G 5

Brazilian literature, including the Portuguese colonial literature, from the 16th century to the present.

Redenbarger.

Au Qtr. 5 cl. Prereq: 421, and 422 or 423, or permission of instructor.

622†* Luis de Camoes U G 5

An intensive study of *Os Lusíadas*.

Wi Qtr. 5 cl. Prereq: 421, or 422 and 423, or permission of instructor.

623†* Modern Brazilian Novel U G 5

The Brazilian novel from the 1930's to the 1960's.

Wi Qtr. 5 cl. Prereq: 421, and 422 or 423, or permission of instructor.

693 Individual Studies U G 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

694 Group Studies U G 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

893 Individual Studies G 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

894 Group Studies G 1-15

Investigation of minor problems in the various fields of Portuguese literature and language.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 30 cr hrs.

Poultry Science

Office: 108 Poultry Administration Building, 674 West Lane Avenue, 422-4821

Domestic Animals in the Service of Man

See Animl Sc 100. Offered in cooperation with Dairy Sc and Pltry Sc.

General Prerequisites for Courses Numbered 200

Unless otherwise indicated, the prerequisites for 200-level courses are 45 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified courses numbered 100-199.

200 Fundamentals of Poultry Science U 5

Application of science and technology in the poultry and related industries. Marsh and Stephens.

Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: Botany/Zoology 110 or Animl Sc 100.

**General Prerequisites for Courses
Numbered 300 and 400**

Unless otherwise indicated, the prerequisites for 300 and 400-level courses are 90 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified courses numbered 100-399.

420 Principles of Animal Improvement U 5

An introduction to the methods available for bringing about genetic change in farm animals. Fechheimer, Irvin, and Swiger.

Au, Wi, Sp Qtrs. 5 cl. Prereq: Animl Sc 100, Math 148 or equiv and Genetics 140. Not open to students with credit for Animl Sc 420 or Dairy Sc 420. Cross-listed in Animl Sc and Dairy Sc.

430 Principles of Animal Nutrition U 5

A study of the fundamental principles of nutrition in mammals and birds. Cline, Latshaw, and Tyznik.

Su, Au, Wi Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: Chem 102 or 122, and Math 148 or equiv. Not open to students with credit for Animl Sc 430 or Dairy Sc 430. Cross-listed in Animl Sc and Dairy Sc.

494 Group Studies U 2, 3, or 5

Intensive study of selected areas of poultry science appropriate to the group and not provided in other courses.

Su, Au, Wi, Sp Qtrs. Cl hrs arr. Prereq: 200. Repeatable to a maximum of 10 cr hrs.

**General Prerequisites for Courses
Numbered 500**

Unless otherwise indicated, the prerequisites for 500-level courses are 15 cr hrs in the same discipline numbered 200 or higher, or 10 cr hrs in courses numbered 200 or higher in the same discipline, plus 10 cr hrs in courses numbered 200 or higher in specified allied disciplines; or baccalaureate degree.

589 Poultry Science Experience U 5

Practical experience, including completion of outlined program and written report, in an approved poultry establishment. Marsh and Stephens.

Su, Au, Wi, Sp Qtrs. Prereq: Jr standing or higher and permission of instructor.

593 Individual Studies U 2, 3 or 5

Su, Au, Wi, Sp Qtrs. H593 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Repeatable to a maximum of 10 cr hrs. Prereq: 15 cr hrs 200-level courses or higher in pltry sc, animl sc, or dairy sc and permission of instructor.

**General Prerequisites for Courses
Numbered 600**

Unless otherwise indicated, the prerequisites for 600-level courses are 15 cr hrs in courses in the same discipline numbered 300 or higher, or 10 cr hrs in courses numbered 300 or higher in the same discipline, plus 10 cr hrs in courses numbered 300 or higher in specified allied disciplines.

**610* Avian Growth
and Meat Production U G 5**

Physiology of growth and development in avian species; environmental factors influencing growth. Coleman.

Sp Qtr. 5 cl. Prereq: 200 and 430 or Zoology 220.

**611* Avian Reproduction
and Egg Production U G 5**

Physiology of avian reproduction and egg production as affected by circadian rhythms, social stress, neuroendocrine mechanisms, ambient environment and immunological competence. Coleman.

Sp Qtr. 5 cl. Prereq: 200 and 430 or Zoology 220.

Physiology of Reproduction and Growth

See Dairy Sc 612. Offered in cooperation with Animl Sc and Dairy Sc.

**Laboratory in Reproductive Physiology
and Artificial Insemination**

See Dairy Sc 613. Offered in cooperation with Animl Sc and Dairy Sc.

**630 Nutrition and Feeding
of Monogastric Animals U G 5**

The nutrition of swine, poultry, and laboratory animals; principles and practice. Cline, and Latshaw.

Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 430 or equiv. Not open to students with credit for Animl Sc 630. Cross-listed in Animl Sc.

**640 Prevention and Control of Avian
Diseases U G 5**

The etiology, recognition, prevention, and control of the important diseases of poultry and game birds. Marsh.

Wi Qtr. 3 cl, 2 2-hr lab. Prereq: Chem 102 or 122 and Microbiol 509 or 601.

**650 Egg and Poultry Products
Technology U G 5**

Quality identification and maintenance; processing; physical, chemical, microbiological and nutrient properties; preservation and utilization of egg and poultry products. Chipley.

Au Qtr. 3 cl, 2 2-hr lab. Prereq: Chem 102 or 122 and Microbiol 509 or 601.

695 Seminar U G 1-2

Naber.

Au, Wi, Sp Qtrs.

**General Prerequisites for Courses
Numbered 700**

Unless otherwise indicated, the prerequisites for 700-level courses are 15 cr hrs in courses in the same discipline numbered 400 or higher, plus additional specified courses numbered 600 or higher.

Advanced Reproductive Physiology

See Dairy Sc 710. Offered in cooperation with Animl Sc and Dairy Sc.

**721 Genetics of Animal
Populations I U G 3**

Parameters of static populations, genetic arrays and equilibria and statistical measures. Partitioning the phenotypic variance mutation, migration, selection and chance. Swiger.

Wi Qtr. 3 cl. Prereq: 420 or Genetics 500 and Genetics 650 or equiv. Not open to students with credit for Animl or Dairy Sc 721. Cross-listed in Animl Sc and Dairy Sc.

**722 Genetics of Animal
Populations II U G 3**

Selection of polygenic characters, mating systems, and development of breeding plans. Swiger.

Sp Qtr. 3 cl. Prereq: 721 or Animl Sc 721 or Dairy Sc 721 or equiv. Not open to students with credit for Animl or Dairy Sc 722. Cross-listed in Animl Sc and Dairy Sc.

794 Group Studies U G 2, 3 or 5

Advanced subjects in poultry science to be announced during the previous quarter and not provided by other courses.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

General Prerequisites for Courses Numbered 800 and 900

Unless otherwise indicated, the prerequisites for 800 and 900-level courses are 30 cr hrs in courses in the same discipline, or 20 cr hrs in the same discipline, plus 25 cr hrs in specified allied disciplines.

810 Advances in Physiology of Domestic Animals G 3

Au, Wi, Sp Qtrs. 4-hr cl. Prereq: Acceptable courses in physiol, anatomy, biochem, and written permission of instructor. Not open to students with credit for Animl Sc 810 or Dairy Sc 810. Cross-listed in Animl Sc and Dairy Sc.

810.01 Anterior Pituitary Function

Bacon.

Au Qtr.

810.02 Endocrinology of Reproduction

Gomes.

Wi Qtr.

810.03 Immunology and Immunogenetics

Hines.

Sp Qtr.

810.04†* Thyroid and Parathyroid Function

Au Qtr.

810.05†* Mammalian Germ Cells

Murray.

Wi Qtr.

810.06†* Biometeorology and Animal Performance

Ludwick.

Wi Qtr.

820 Current Topics in Animal Genetics G 3

3 cl. Prereq: Acceptable courses in animal genetics, mathematics, and statistics. Repeatable to a maximum of 12 cr hrs. Not open to students with credit for Animl Sc 820 or Dairy Sc 820. Cross-listed in Animl Sc and Dairy Sc.

820.01 Selection Index Theory

Allaire.

Wi Qtr.

820.02* Nonadditive Genetic Variance

Harvey and Swiger.

Wi Qtr.

820.03* Polymorphic Systems

Fechheimer.

Wi Qtr.

820.04†* Simulation of Genetic Systems

Harvey.

Wi Qtr.

820.05†* Cytogenetics of Animal Populations

Fechheimer.

Wi Qtr.

820.06†* Physiological Indices in Animal Breeding

Fechheimer.

Au Qtr.

830 Advanced Studies in Nutrition G 3

Su, Au, Wi, Sp Qtrs. 3 or 4 cl. Prereq: 630 or Animl Sc 630 or Dairy Sc 630 or Hum Nutr 610; Fd Sc&Nu 761 and 762; and 10 grad cr hrs in physiol. Not open to students with credit for Animl Sc 830 or Dairy Sc 830 or Human Ntr 830. Cross-listed in Animl Sc, Dairy Sc and Hum Ntr.

830.01* Energy

Conrad.

Au Qtr.

830.02* Minerals

Cline.

Wi Qtr.

830.03* Proteins and Amino Acids

Naber and Vivian.

Sp Qtr.

830.04†* Vitamins

Naber.

Au Qtr.

830.05†* Lipids

Palmquist.

Wi Qtr.

830.06†* Laboratory Methods in Nutrition

Allred and Vivian.

Sp Qtr.

898 Interdepartmental Seminar in Nutrition G 1

See Interdepartmental Seminars.

Sp Qtr.

993 Individual Studies G 2, 3, or 5

Su, Au, Wi, Sp Qtrs. Prereq: 15 cr hrs of 300-level courses or higher in pltry sc, animl sc, or dairy sc and permission of instructor. Repeatable to a maximum of 10 cr hrs.

999 Research G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Preventive Medicine

Office: B-107 Starling-Loving Hall, 320 West 10th Avenue, 422-8691

685 Field Experience in Comprehensive Health Planning P 6, 12, 18 G 6-12

Full time assignment to a state or local health planning agency, to work on a specific project in community health under the guidance of a selected faculty adviser.

Su, Au, Wi, Sp Qtrs. Field time assigned for medical students 1, 2, or 3 months and grad students ½ or entire summer quarter. Prereq: Permission of instructor.

730 Principles of Environmental Health I P G 3-5

Survey of major environmental factors with impact on human health, including air and water pollution, noise, housing, accidents, radiation, and occupational hazards.

Sp Qtr. 2 1½-hr cl or 2 1½-hr cl and additional conferences and reviews. Prereq: Permission of instructor.

764 Design of Biomedical Investigations P G 3

Design of studies in biomedical area; formulation of hypotheses; sampling; planning observations and measurements; selection of statistical techniques; testing of hypotheses. Hensel.

Au Qtr. 2 2-hr cl. Prereq: Permission of instructor. Not open to students with cr for Vet Prev 764 or Vet Phys 764. Cross-listed in Vet Prev Med and Vet Phys and Pharm.

765 Biostatistics and Computers in Medical Research P G 3

Review of the fundamental concepts of biostatistics, including more complex analysis of variance designs, integrated with application of the electronic computer. Hensel.

Wi Qtr. 1 2-hr cl and 1 2-hr lab. Prereq: Permission of instructor. Not open to students with cr for 785 or Vet Prev 765. Cross-listed in Vet Prev Med.

770 Health Survey Methods P G 3

An introduction to health survey methods; lectures, readings, classroom and community exercises; consideration of health planning and epidemiological applications. Lanese and Keller.

Wi Qtr. 1 2-hr cl and 1 1-hr conf. Prereq: Grad or professional standing and permission of instructor.

771 Health Data: Sources and Uses P G 3

Examination of past and current health data accumulations, discussion of their uses and shortcomings, and experience in the acquisition and analysis of health-related information. Lanese and Keller.

Sp Qtr. 3 1-hr cl. Prereq: 770, or permission of instructor.

780 Current Health Problems: Maternal and Child Health P G 2

The epidemiology of major causes of death and disability among mothers and children; community programs for prevention, detection, and treatment; current status of control. Bashe.

Wi Qtr. 1 2-hr cl. Prereq: Grad or professional standing and permission of instructor.

781 Current Health Problems: Adult Health P G 2

The epidemiology of major causes of death and disability among adults; community programs for prevention, detection, and treatment; current status of control on local, state, national, and international levels. Keller.

Sp Qtr. 1 2-hr cl. Prereq: Grad or professional standing and permission of instructor.

786 Biometrics Laboratory P G 3

Participation in consultations offered to biomedical researchers, combined with individualized faculty guidance. Lanese, Keller, and Hensel.

Au, Wi, Sp Qtrs. 2 1-hr lab and 2 1-hr conf. Prereq: 764 or 765 or equiv. Repeatable to a maximum of 6 cr hrs.

787 Health Data Processing P G 3

Forms design and techniques for the acquisition and manipulation of biomedical data sets, including some fundamentals of electronic data processing.

Sp Qtr. 2 1½-hr cl. Prereq: 764 or equiv and permission of instructor.

793 Individual Studies in Preventive Medicine P 6, 12, 18 G 2-5

1, 2, 3, or 4 months; offered all months except June. Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs for professional credit and 15 cr hrs for grad credit.

793.01 Aerospace Medicine

Wick.

793.02 Biometrics

Lanese.

793.04 Environmental Health

Keller.

793.05 Epidemiology

Keller.

793.08 Community Health

Keller.

793.09 Comprehensive Health Planning

Chirikos.

793.10 Health Agency Administration

Banks.

793.11 Behavioral Sciences Studies in Health

Lanese.

794 Group Studies in Preventive Medicine P 6, 12, 18 G 2-5

1, 2, 3, or 4 months; offered all months except June (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs for professional credit and 15 cr hrs for grad credit.

794.01 Biometrics

Lanese and Keller.

794.02 Environmental Health

Keller.

794.03 Epidemiology

Keller, Lanese, and Bashe.

794.04 Community Health

Banks, Chirikos, and Campbell.

812 Public Health Organization G 3

History and development of public health agencies; legal bases of public health law; administrative structure of official and voluntary agencies and their relationships to the complex of health and medical services in the community. Campbell.

Sp Qtr. 1 2-hr cl and 1 1-hr conf. Prereq: Permission of instructor.

840 Clinical Aerospace and Occupational Medicine I G 3

Medical qualification for employment or for flying, from viewpoints of major clinical specialties; general aerospace and industrial medical problems; aerospace and ground safety programs. Wick.

Su Qtr. 2 1½-hr cl. Prereq: Permission of instructor.

841 Clinical Aerospace and Occupational Medicine II G 3

Continuation of 840. Wick.

Su Qtr. 2 1½-hr cl. Prereq: 840 or permission of instructor.

849 Pro-Seminar in Community Health Development G 2-3

Each week a basic area of community health development is presented by a specialist; the students prepare by reading assigned literature in this area, respond to questions raised during each session, and prepare reviews of the key issues.

Wi, Sp Qtrs. 1 2-hr session per wk, and additional conferences. Prereq: Grad standing in prev med or permission of instructor. Repeatable to a maximum of 12 cr hrs.

850 Seminar in Preventive Medicine G 1-3

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 8 cr hrs.

851 Epidemiologic Methods G 3

Principles of epidemiology with special emphasis on methods employed in current epidemiologic studies of chronic diseases. Bashe and Keller.

Au Qtr. 2 2-hr cl. Prereq: Permission of instructor.

852 Comprehensive Health Planning G 3

Study of comprehensive health planning concepts and techniques; with emphasis on topics relating to the design of health plans at the community level. Chirikos.

Wi Qtr. 1 2-hr session plus 1 1-hr conference per wk. Prereq: Grad standing in prev med or permission of instructor.

853 Behavioral Epidemiology G 3

A review of the epidemiological literature that examines the relationship between behavioral factors, theories of stress, and disease processes. Lanese and Banks.

Au Qtr. 2 1½-hr cl. Prereq: Permission of instructor.

854 Economics of Community Health G 3

Survey of the application of economic analysis to community health problems; emphasis on topics relating to the allocation of health resources and health manpower. Chirikos.

Au Qtr. 1 2-hr cl and 1 1-hr cl. Prereq: Econ 402 or permission of instructor.

855 Community Health Development G 3

A study of the nature of community development, its operational principles, and successful techniques, as they may be applied to the health field. Campbell.

Au Qtr. 2 1½-hr conf. Prereq: Permission of instructor.

857 Health Planning Laboratory G 3-5

Practicum in the application of planning techniques to current health problems and policy issues. Chirikos and staff.

Sp Qtr. 2 2½-hr conf. Prereq: 852 or permission of instructor. Repeatable to a maximum of 10 cr hrs.

860 Epidemiology and Public Health G 3

Principles of public health, vital statistics, epidemiology, environmental sanitation, and communicable disease control on local, national, and global bases. Keller and staff.

Wi Qtr. 2 2-hr conf. Prereq: 851 or equiv, or permission of instructor.

880 Analysis of Health Care Organizations G 3

Acquaint student with concepts and techniques of analysis of the structures and actions of health organizations. Keller and Campbell.

Wi Qtr. 2 1½-hr cl. Prereq: Permission of instructor.

885 Behavioral Responses in Disease Prevention G 3

A survey of behavioral science literature concerning health behavior, illness behavior, and sick-role and their impact upon programs for prevention, early detection, and amelioration of disease. Banks.

Sp Qtr. 1 2-hr cl and 1 1-hour conf. Prereq: Permission of instructor.

999 Research in Preventive Medicine G Arr

Research for thesis or dissertation purposes only. Su, Au, Wi, Sp Qtrs.

Psychiatry

Office: 071 Upham Hall, 473 West 12th Avenue, 422-7182

708 Psychopathology I P G 1

A sequence course in autumn, winter, and spring quarters reviewing the clinical, etiological, and psychodynamic aspects of the common psychiatric disorders.

Au Qtr. 1 cl. Prereq: Permission of chairman.

709 Psychopathology II P G 1

Continuation of 708.

Wi Qtr. 1 cl. Prereq: 708 or equiv.

710 Psychopathology III P G 1

Continuation of 709.

Sp Qtr. 1 cl. Prereq: 708 and 709, or equiv.

711 Introduction to Group Psychotherapy P G 1

Rationale for the use of group psychotherapy and fundamental techniques needed in starting and conducting a psychotherapeutic group.

Wi Qtr. 1 cl. Prereq: Permission of instructor.

712 Advanced Psychotherapy and Family Therapy I P G 1-2

Family therapy, communication systems, family rules and structure; analysis of therapist-patient relationships.

Wi Qtr. 1 cl or 1 cl, 1 lab hr optional. Prereq: 740 and 741 or equiv.

713 Advanced Psychotherapy and Family Therapy II P G 1-2

Continuation of 712.

Sp Qtr. 1 cl or 1 cl, 1 lab hr optional. Prereq: 712 or equiv.

714 Behavioral Science I P G 1

Intensive coverage of scientific research procedures in the behavioral sciences, including the nature of the hypothesis, experimental designs, techniques of controls, and some basic parametric and nonparametric statistics.

Wi Qtr. 1 cl. Prereq: Permission of chairman.

715 Behavioral Science II P G 1

Continuation of 714.

Su, Au, Wi, Sp Qtrs. 1 cl. Prereq: 714.

717 Neuropathological Basis of Mental Disorders P G 2

Emphasis on new trends in neuropathology as illustrated by results of recent research; considered as a reevaluation of established and hypothetical etiological mechanism of diseases affecting the nervous system.

Sp Qtr. 2 cl. Prereq: Permission of chairman.

718 Psychiatric Theory I P G 1

Psychiatric theories of personality, nature and etiology of psychopathology and psychotherapy, plus relevant historical material; emphasizes Freudian psychoanalytic theory and its precursors.

Au Qtr. 1 cl. Prereq: Permission of chairman.

719 Psychiatric Theory II P G 1

Continuation of 718.

Wi Qtr. 1 cl. Prereq: 718 or equiv and permission of chairman.

720 Psychiatric Theory III P G 1

Psychiatric theories of personality, nature and etiology of psychopathology and psychotherapy, plus relevant historical material; emphasizes other major theorists neither classical, psychoanalytic, nor Neo-Freudian.

Sp Qtr. 1 cl. Prereq: Permission of chairman.

721 Neuroendocrine Bases of Behavior P G 1

Normal and pathologic operation of selected biologic control systems examined in terms of cybernetics, relating anatomy, physiology, and pharmacology to overt behavior.

Au Qtr. 1 cl. Prereq: Permission of chairman.

722 Forensic Psychiatry P G 1

Psychiatric testimony in criminal and civil legal procedures; determination of competency and indications for involuntary commitment; legal responsibilities of the psychiatrist.

Sp Qtr. 1 cl. Prereq: MD degree and permission of chairman.

723 Community Psychiatry P G 2

A review of the recent growth, development, and expanding programs in the field of community psychiatry.

Su Qtr. 2 cl. Prereq: Permission of chairman.

724 Psychiatric Applications of Psychological Tests P G 1-2

Psychological testing procedures and their use in clinical psychiatry (intelligence testing, personality evaluation, and neuropsychological assessment).

Su Qtr. 1 cl; or Su (2nd term). 2 cl, 2 lab hrs optional. Prereq: Permission of instructor.

740 Basic Psychotherapy I P G 1

Basic concepts of psychotherapy, theory, and technique, with review of the development and structure of the personality.

Au Qtr. 1 cl. Prereq: Permission of chairman.

741 Basic Psychotherapy II P G 1

Continuation of 740; a study of basic concepts of psychotherapy, theory, and technique, with review of the development and structure of the personality.

Wi Qtr. 1 cl. Prereq: 740 or equiv.

742 Child Psychiatry P G 2

Diagnosis and therapy in child psychiatry; etiologic forces that contribute to the development of mental illness in children and their families.

Au, Wi Qtrs. 1 2-hr cl. Prereq: Permission of instructor.

745 History of Psychiatry I P G 1

The development of psychiatric concepts and practices through the ages; study of biographical sources and significant writings.

Sp Qtr. 1 cl. Prereq: Permission of chairman.

746 History of Psychiatry II P G 1

Continuation of 745.

Wi Qtr. 1 cl. Prereq: 745 or equiv and permission of chairman.

751 Anatomical Substrates of Behavior P G 1

A review of topography and discussions of the nervous system as a substrate of higher nervous functions and seat of mental disturbances.

Au Qtr. 1 cl. Prereq: Adequate knowledge of neuroanatomy and permission of instructor.

760 Clinical Hypnosis and Hypnotherapy P G 1-3

Theoretical and clinical aspects of hypnosis, with experience in techniques and applications in psychotherapy. Gwynne.

Sp Qtr. 1 cl, 4-hr lab optional. Prereq: 710 or equiv and permission of instructor.

793 Individual Studies in Psychiatry P 6, 12, 18 G 1-18

A supervised, scholarly investigation of some aspects of psychiatry in which there is interest by the student and expertise by the faculty.

1, 2, or 3 months. Offered all months (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Prereq: Adequate clinical training in psychiatry and permission of chairman and instructor. Repeatable to maximum of 18 cr hrs.

801 Scientific Bases of Clinical Psychiatry G 1-3

Principles of case study, interviewing, history-taking, and diagnosis; rationale, indications, contra-indications, and precautions for physiological and psychological treatment.

Su Qtr (2nd term). 6 cl (4 lab hrs optional). Prereq: MD and permission of instructor.

850 Seminars in Psychiatry G 1-6

a—Clinical Psychiatry
b—Group Therapy
c—Psychotherapy
d—Psychiatric Literature
e—Child Psychiatry

Su, Au, Wi, Sp Qtrs. 1 cl. Prereq: Permission of chairman and instructor. Repeatable to a maximum of 12 cr hrs.

980 Advanced Clinical Training in Psychology G 5

Provides supervised basic, theoretical, and applied experience in the practice of clinical psychology.

Su, Au, Wi, Sp Qtrs. Full time (40 hrs plus). Prereq: Two yrs graduate study in clinical psychology and approval of staff. Repeatable to maximum of 30 cr hrs.

999 Psychiatry Research G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. Prereq: MD and residency in Psychiatry.

Psychology

Office: 321 Arps Hall, 1945 North High Street, 422-6741

100 General Psychology U 5

Introductory psychology, a prerequisite to advanced courses; the application of the scientific method to behavior; topics include learning, motivation, perception, personality, physiological basis of behavior.

Su, Au, Wi, Sp Qtrs. 5 cl. H100 (honors) may be available to students enrolled in an honors program or by permission of dept.

101 General Psychology U 5

Continuation of 100 with further emphasis on the development of a scientific attitude toward personal psychological problems in the fields of learning, thinking, intelligence, and personality.

Su, Au, Wi, Sp Qtrs. 5 cl. H101 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 100.

120 Psychology of Personal Effectiveness U 3

A survey of theories and practices designed to improve higher level skills in reading, perception, learning, and adjustments.

Su, Au, Wi, Sp Qtrs. 2 cl, 1 2-hr lab.

130 Advising College Students U 1-4

Selected students will study the dynamics of and have experiences in advising students concerning their scholastic, social, and personal development.

Wi, Sp Qtrs. Prereq: 3rd qtr freshman or above and permission of instructor. Repeatable to a maximum of 4 cr hrs.

210 Educational Psychology for Medical Personnel U 5

Consideration of human capacities, abilities, interests, individual differences, and overall development; aspects of learning, personality, and physiological correlates of psychological phenomena of interest to medical personnel.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 100. Not open to students with credit for 230.

220 Quantitative and Statistical Methods in Psychology I U 3

Elementary presentation of probability, descriptive, and inferential statistics and methods of measurements relevant to contemporary psychology.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 100 or 300; and Math 116 and 117, or equiv.

221 Quantitative and Statistical Methods in Psychology II U 4

A concentrated examination of the applications of statistical tools in inference and theory construction in contemporary psychology.

Su, Au, Wi, Sp Qtrs. 2 cl, 1 2-hr lab. Prereq: 220. Not open to students with less than a grade of "C" in 220.

230 Introduction to Educational Psychology U 5

Facts and principles of human development and learning are applied to the problems of education; scientific evidence in the solution of educational problems is stressed.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 100. Not open to freshmen or to students with credit for 210.

294† Group Studies U 1-6

Reading and/or research projects by special agreement between instructor and students; topics to be announced.

Au, Wi, Sp Qtrs. Prereq: 100 and 101. Not open to freshmen. Repeatable to a maximum of 6 cr hrs.

300 Introductory Psychology U 5

An introduction to psychology for students with science background; topics covered similar to 100.

Au, Wi Qtrs. 5 cl. Prereq: 10 cr hrs of science. Not open to students with credit for 100.

310 Basic Psychology: Perception U 3

Theory, methods, and physiological correlates of sensory and perceptual processes; emphasis on the relation of behavior to stimulus variation.

Su, Au, Sp Qtrs. 3 cl. Prereq: 220.

311 General Psychology: Motivation and Action U 3

A behavioristic presentation of experimental work on learning and motivation.

Au, Wi Qtrs. 3 cl. Prereq or concur: 220.

312 General Psychology: Learning and Thinking U 4

An introduction to the experimental study of human memory, verbal learning, and cognition.

Wi, Sp Qtrs. 3 cl. Prereq: 220.

320 Social Psychology U 3

The influence of group processes, organizational variables, and culture upon the social modification of basic drives, attitudes, and language.

Su, Au, Wi, Sp Qtrs. 3 cl. H320 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 5 cr hrs in psych.

321 Applications of Psychology U 3

Drawing on general psychology, evaluation of individual and group performance in relation to social problems is emphasized; examples are drawn from industry, education, and government.

Su, Au, Sp Qtrs. 3 cl. Prereq: 101. Not open to students with credit for 102.

330† Psychology of Abnormal Behavior U 3

A consideration of the symptomologies, etiologies and therapies of the major neuroses and psychoses with special emphasis on psychoanalytic theories and methods.

Su Qtr. 3 cl. Prereq: 5 cr hrs in psych.

331 Psychopathology and Psychotherapy I U 3

Examination of current problems, issues, theories and approaches to psychological deviance.

Au, Sp Qtrs. Prereq: 5 cr hrs in psych.

332 Psychopathology and Psychotherapy II U 3

Continuation of 331.

Wi Qtr. Prereq: 10 cr hrs in psych.

333 Human Behavior Problems U 3

Analyses of behavior patterns which are often considered undesirable or otherwise problematic; emphasis on behavioral definitions and analyses of problems, and on behavioral interventions.

Su, Au Qtrs. Prereq: 5 cr hrs in psych.

340 Genetic Psychology U 3

A survey of developmental psychology including some phylogenetic perspective.

Au, Wi Qtrs. 3 cl. Prereq: 9 cr hrs in psych.

500 Experimental Psychology U 4

The experiments are selected both for general and cultural values and for preparation for technical research in experimental psychology.

Au, Wi, Sp Qtrs. 2 cl, 3 lab hrs. Prereq: 310, 311 and 312; or equiv with written permission of instructor. Open only to psych majors.

501 Physiological Psychology U G 3

Some physiological correlates of psychological phenomena; the properties of integrated organ systems, with emphasis upon the characteristics of their elements; consideration of psychosomatic abnormalities.

Wi Qtr. 3 cl. Prereq: 101 or 300.

502 Advanced Physiological Psychology U G 3

Further physiological correlates of psychological phenomena; sensory and motor processes will be special topics.

Sp Qtr. 3 cl. Prereq: 501.

503 Experimental Approaches to Cognition U G 4

Cognitive processes are studied from an experimental viewpoint. Topics may include attention, pattern recognition, speech perception, memorial processes and others.

Wi, Sp Qtrs. 2 2-hr cl. Prereq: 220, and 310 or 312.

504† Psychology of Music U G 3

Psychological factors in musical learning, memorization, rhythm, harmony, form, tone color, interpretation, dictation, and music talent.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

505 Contemporary Viewpoints in Psychology U G 3

A consideration of the development of modern scientific psychology from its roots in the school of the 19th century to its contemporary status.

Wi Qtr. 3 cl. Prereq: 16 cr hrs in psych.

506 Advanced Experimental Psychology U 3

A continuation of 500 in which the student conducts additional experiments including an experiment of his own design.

Su Qtr. 2 cl, 2 lab hrs. Prereq: 500.

511 Psychological Testing U G 3

An overview of theoretical and practical aspects of the assessment and prediction of human behavior; topics include achievement, intelligence, personality, attitudes, interests, and interpersonal relations.

Au, Wi Qtrs. 3 cl. Prereq: 10 cr hrs in psych.

520 Experimental Social Psychology U 4

Typical experiments in such social psychological areas as attitude change, group processes, and group influences upon the individual.

Au, Sp Qtrs. 2 cl, 4 lab hrs. Prereq: 221, 320, and permission of instructor. Open only to psych majors. Repeatable to a maximum of 12 cr hrs.

521 Personnel and Organizational Psychology U G 3

Influence of individual and organizational factors, task involvement, relationships among individuals, leadership processes, and assessment of effectiveness within organizations.

Su, Wi, Au, Sp Qtrs. 3 cl. Prereq: 220 or written permission of instructor.

530 Psychology of Personality U G 3

Major theoretical and research orientations in the study of personality; consideration of psychological processes involved in the attribution of personality characteristics.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 10 cr hrs in psych.

531 Clinical Psychology and Alternative Approaches U 3

Prereq: 15 cr hrs in psych. Open only to psych majors.

531.01 Community Aspects

Community psychology; the influence of social forces on the behavior of individuals and groups, including attention to problems of psychosocial deviance.

Au Qtr. 3 cl. Not open to students with credit for 531.

531.02 Intervention Aspects

A conceptual analysis of psychotherapy and other approaches to behavior change; emphasizes ways of evaluating interventions, not techniques of traditional classifications of mental disorders.

Wi Qtr. 3 cl.

531.03 Individual Aspects

Awareness or consciousness will be examined from several perspectives including psychobiological; mystical-religious; political-social; psychotherapeutic; behavioral; dispositional, etc.

Sp Qtr. 3 cl.

531.04 Laboratory Aspects

Au, Wi, Sp Qtrs. 6 lab hrs.

539 Mental Hygiene for Professional Workers U G 3

The determinants of maladjustment and principles used in the prevention of maladjustment for teachers, personnel workers, social workers, psychologists, occupational therapists, and other professional groups.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 10 cr hrs in psych. Not open to students with credit for 640.

540 Counseling Psychology: An Introduction U G 3

For students interested in counseling and personnel work; discussion of counseling psychology, counseling, and testing.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 10 cr hrs in psych.

541 Educational and Vocational Appraisal U G 4

Theory and techniques of appraisal of individual characteristics as related to the formulation of future educational and vocational plans.

Au, Wi Qtrs. 3 cl. Prereq: 10 cr hrs in psych.

542 Vocational Psychology U G 3

Survey of the psychological aspects of work and their implication for vocational development; the use of labor force and occupational information in vocational choice.

Su, Sp Qtrs. 3 cl. Prereq: 10 cr hrs in psych.

543 Psychology of Women U G 4

Exploration of the nature and causes of sex differences in behavior patterns and factors influencing development of women through psychological theory and research.

Wi Qtr. 4 cl. Prereq: 12 cr hrs in Psych. Not open to psych grad students.

550 Psychology of Childhood U G 3

Presentation of psychological aspects of growth and development in middle childhood.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 10 cr hrs in psych.

551 Adolescence U G 3

A study of the outstanding characteristics of the adolescent, the educational and social problems arising at this period, and means for dealing with the problem.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 10 cr hrs in psych.

560 Educational Psychology U G 3

Critical appraisal of the implications for education of modern psychological findings in advanced educational psychology.

Su Qtr. 3 cl. Prereq: 10 cr hrs in psych.

571 Psychology of Developmental Disability U G 4

The psychological problems of exceptional children including learning disorders, sensory defects, physically handicapped, emotionally disturbed, and other developmental disabilities.

Au, Wi Qtrs. 3 cl. Prereq: 10 cr hrs in psych or written permission of instructor.

H599 Honors Course U G 3

A program of readings, conferences, and reports selected to provide maximum individual development and preparation for graduate study in the field.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Permission of departmental Undergraduate Program Committee. Repeatable to a maximum of 9 cr hrs.

600 Psychology of Learning U G 4

The principles that underlie the discovery, fixation, and retention of new modes of human behavior; emphasis on theoretical formulation of the necessary conditions of learning and forgetting.

Su, Au Qtrs. 4 cl. Prereq: 101 or equiv.

601 Comparative Psychology U G 3

Principles of animal behavior, with emphasis upon the contributions of zoology and B. F. Skinner.

Au Qtr. 2 cl, 1 2-hr lab. Prereq: 20 cr hrs in psych or permission of instructor.

602 Psychology of Listening and Reading U G 3

Introductory survey of work on reading and the perception of speech; emphasis is on reading with a focus on the underlying perceptual and cognitive processes.

Au Qtr. 2 1½-hr cl. Prereq: 100.

603 Visual Perception U G 3

Phenomena, theory, and methods in the study of vision and visual perception as a model for sensory and perceptual processes.

Wi Qtr. 3 cl. Prereq: 310 or permission of instructor. Not open to students with credit for 503.

604 Psychology of Language U G 5

Introductory survey of the psychological research on language behavior; emphasis on understanding both language processes in the adult speaker and a child's acquisition of language.

Wi Qtr. 2 2-hr cl. Prereq: 100.

605 Psychophysiology of the Special Senses U G 3

A survey of the basic physiology of the senses and the peripheral nervous system; emphasis on receptor mechanisms and neural coding processes.

Su Qtr. 3 cl. Prereq: 502 or 503 or written permission of instructor.

609 Introduction to Markov Learning Models U G 4

An introductory review of model building in psychology with special emphasis on Markovian mathematical techniques; detailed examination of two or three Markovian learning models.

Au Qtr. 2 2-hr cl. Prereq: 220 and 221.

610 Introduction to Quantitative Learning Models U G 4

A continuation of 609; emphasis on non-Markovian models.

Wi Qtr. 3 cl. Prereq: 609.

611 Educational Testing U G 3

A service course for those majoring in elementary and secondary education, guidance, school psychology, and school administration; stress on use of measurements in school.

Su Qtr. 3 cl. Prereq: 15 cr hrs in psych.

615 Introduction to Mathematical Psychology U G 3

Survey of current topics in mathematical psychology; topics include measurement and scaling, decision theory, signal detection theory, information theory, and mathematical learning theory.

Au Qtr. 3 cl. Prereq: 510 or equiv.

616 Psychological Scaling U G 3

Course covers one-dimensional and multi-dimensional procedures for scaling; ordinal and metric procedures are discussed; theory and methods covered.

Wi Qtr. 3 cl. Prereq: 615 or grad standing.

619 Visual Information Processing U G 3

Research and models concerning visual coding, search, detection, comparison, selection, classification, and recognition.

Au Qtr. 3 cl. Prereq: 310 or permission of instructor.

620 Human Performance U G 5

Information processing in human behavior; topics include signal detection, attention, memory, and models of cognitive processes.

Au, Sp Qtrs. 5 cl. Prereq: 220 and 12 cr hrs in psych beyond the introductory level.

621 Psychology of Individual Effectiveness U G 4

Description, prediction, and control of individual, social, and task-related determiners of individual behavior and effectiveness.

Au Qtr. 3 cl. Prereq: 220 or equiv with written permission of instructor, or grad standing.

622 Psychology of Organizational Effectiveness U G 4

Effects of organizations and groups on individual behavior, including interpersonal processes (groups, leadership), structural effects (task, technology, reward systems) and organizational conflict and change.

Sp Qtr. 3 cl. Prereq: 220 or equiv with written permission of instructor, or grad standing.

623 Human Motivation U G 4

Overview of theory and research in the explanation of the direction and level of human behavior in organizational settings.

Su, Wi Qtrs. 3 cl. Prereq: 220 or written permission of instructor.

630 Psychology of Public Attitudes U G 3

Attitude organization and change; study of the determinants of attitude.

Au Qtr. 3 cl. Prereq: 320 and 220 or equiv.

632* Prejudice and Personality U G 3

Social psychological theories of group conflict; personality dynamics in prejudice; approaches to the reduction of intergroup hostility.

Au Qtr. 3 cl. Prereq: 220.

635* Psychology in the USSR and Eastern Europe U G 3

A survey of the approaches and bibliography of the psychology of human behavior with emphasis on the USSR.

Wi Qtr. 1 3-hr cl. Prereq: 10 cr hrs in psych or grad standing or permission of instructor.

362 Psychology

theory & research related to adulthood as a sequence of psychological stages involving adjustment & coping behaviors; relationship of adulthood to other lifespan stages

645 Psychology in Urban Settings U G 3

An examination of the psychological and social aspects of urban problems in an actual community setting.

Au Qtr. 2 cl, 1 lab hr.

661 Psychology of the Adult Years U G 3

no repeated
Study of theory, methodology and research related to psychological changes through adulthood and old age, focusing on developmental changes through the adult life span.

Wi Qtr. 3 cl. Prereq: 16 cr hrs in psych.

662 Psychology of Creativity U G 3

A critical examination of conceptual, theoretical, and methodological problems related to the systematic study of creativity; special attention to background factors related to creative behavior.

Au Qtr. 3 cl. Prereq: 15 cr hrs in psych or permission of instructor.

665 Psychology of the Later Years U G 3

Critical consideration of major gerontological issues facing aged adults; concern will be with theories, methodologies, and research into normal aging and senescence.

Sp Qtr. 3 cl.

671 Principles and Economy of Learning U G 3

Principles involved in the control of learning in school with emphasis upon educational technology.

Sp Qtr. 3 cl. Prereq: Grad standing or 10 cr hrs in psych.

680 Intellectually Exceptional U G 3

Theory and concepts of mental retardation, slow learner; causation, diagnosis, and treatment of social, personal, and educational problems of persons so labeled.

Prereq: Written permission of instructor.

680.01 Mentally Retarded

Causes and attributes of mental retardation — diagnosis and treatment of social, personal, and educational problems of persons so labeled.

Sp Qtr. 2 1½-hr cl.

680.02 Intellectually Gifted

Theory and concepts of intellectually exceptional individuals, causation, diagnosis and treatment of social, personal and educational problems of persons so labeled.

Wi Qtr. 3 cl.

682† Principles of Treating the Problem Child U G 3

Methods used in dealing with behavior and personality problems of children.

Wi Qtr. 3 cl. Prereq: 15 cr hrs in psych.

684 Delinquent Behavior U G 3

The meaning and significance of delinquency in a cultural context; its psychological basis from a theoretical and empirical framework; present modes of detection and treatment.

Su, Au, Sp Qtrs. 3 cl. Prereq: 15 cr hrs in psych.

688 Laboratories in Industrial/Organizational Psychology U G 4

Laboratory and field experience in job analysis, selection, validation, measurement, interviewing, training, leadership, and group and organizational processes.

Au, Wi, Sp Qtrs. 4 cl. Prereq: Written permission of instructor. Repeatable to a maximum of 40 cr hrs in

any combination of alphabetical subdivisions.

- a—Job and Task Analysis
- b—Development of Criteria
- c—Selection Devices
- d—Placement and Classification
- e—Validation Procedures
- f—Individual Differences Measures
- g—Satisfaction Measures
- h—Interviewing
- i—Training and Development
- j—Leadership
- k—Group Processes
- l—Organizational Processes

693 Individual Studies U G 1-15

Individual reading or research projects by special agreement between instructor and student.

Su, Au, Wi, Sp Qtrs. Prereq: 16 cr hrs in psych and permission of instructor. Repeatable to a maximum of 30 cr hrs for undergrads and to a maximum of 45 cr hrs for grads in any combination of decimal subdivisions.

693.01 Clinical Psychology

693.02 Counseling Psychology

693.03 Developmental Psychology

693.04 Experimental Psychology

693.05 Industrial Psychology

693.06 Quantitative Psychology

693.07 Social Psychology

H699 Honors Seminar in Clinical/Counseling Psychology U 3

Designed to give advanced undergraduate psychology majors an opportunity to gain academic and practical knowledge about clinical/counseling psychology.

Prereq: Jr or sr standing and permission of instructor. Repeatable to a maximum of 9 cr hrs for each decimal subdivision.

H699.01 Problems and Issues

Au, Wi, Sp Qtrs. 3 cl. and/or 3 lab hrs.

H699.02* Field Experience

Faculty supervised experience in field research and practice.

Au, Wi, Sp Qtrs. 1 cl and/or 9 lab hrs.

H699.03 Orientation of New Psychology Majors

Supervised experience in orienting new psychology majors.

Wi Qtr. 1 cl and/or 9 lab hrs.

Introduction to National Security

See Nat Sec Pol S 702.

710 Laboratory in Test Design U G 3

Practice in writing, editing, administering, and validating personality and ability measures.

Wi Qtr. 1 cl, 2 lab hrs. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs.

731 Individual Differences U G 3

Review of major dimensions of individual differences, their developmental history, and significance for psychological generalizations and for the design of educational curricula.

Sp Qtr. 3 cl. Prereq: 220 or 510; 340 and 550 or 551.

763† Hereditary Components of Human Behavior U G 3

Emergence and elaboration of awareness over the evolutionary span; analysis of mind as a psychological construct.

Sp Qtr. 3 cl. Prereq: Grad standing or 20 cr hrs in psych and permission of instructor.

Research Principles and Techniques in National Security

See Nat Sec Pol S 785.

788 Laboratory in Attitude Measurement U G 3

Su, Wi Qtrs. 1 cl, 4 lab hrs. Prereq: Written permission of instructor.

794 Group Studies U G 3

The topics vary from quarter to quarter and will be announced at least one month in advance.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 15 cr hrs in psych at the 500 level or above and permission of instructor.

800 Advanced Experimental Laboratory G 3-15

Advanced training in the experimental and quantitative methods in the several areas of general experimental psychology and comparative psychology.

Su Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

Seminar in National Security Research

See Nat Sec Pol S 801.

801 Advanced Theoretical Psychology G 4

A description and evaluation of the major advanced psychological behavior theories.

Sp Qtr. 4 cl.

802 Advanced Psychology of Motivation G 3

An evaluation of the experimental and theoretical material on: physiological drives; development and maintenance of secondary motives; perception and motivation, conflict.

Sp Qtr. 3 cl. Prereq: 20 cr hrs in psych including 311 or 600 or permission of instructor.

803 Theories of Perception G 4

Consideration of major theoretical positions as attempts to account for data from the content areas of perception, including development, adaptation, learning, set, attention, and memory.

Sp Qtr. 4 cl. Prereq: 310 and 501 or written permission of instructor.

804 Advanced Comparative Psychology G 3

Contemporary literature in comparative psychology.

Sp Qtr. 3 cl. Prereq: 601.

806 Neuropsychology I G 3

An introduction to the principles governing neural integrative mechanisms; morphology of nervous systems of the vertebrates; transmission in individual neurons; properties of junctions in integrative networks; elementary laws of reflex action.

Au Qtr. 3 cl.

807 Neuropsychology II G 3

Functional differentiation of the nervous systems of vertebrates; properties of principle division of the brain; organizations of the forebrain; mechanisms of sleep and waking rhythm; mechanisms of perception.

Wi Qtr. 3 cl. Prereq: 806.

808 Neuropsychology III G 3

Neural mechanisms of motivation and behavioral plasticity; control of major cyclical phenomena, including hunger, thirst, and reproduction; reactions to aperiodic and continued stresses; mechanisms of

the learning process.

Sp Qtr. 3 cl. Prereq: 807.

809 History and Systems of Psychology G 3

Development of psychology from the philosophical antecedents to its present status as a science and a profession; assignments in original sources as far as possible.

Au Qtr. 3 cl. Prereq: 16 cr hrs in psych.

810† Methodological Foundations of Experimental Psychology G 5

Problems of definition of psychological concepts, formulation and testing of hypotheses, theory, construction, and formulation of empirical generalization with reference to design of psychological experiments.

Wi Qtr. 5 cl.

811 Seminar in Experimental Psychology G 2

Su, Au, Wi, Sp Qtrs. 2 cl. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

812† Contemporary Psychological Literature G 1

Sp Qtr. 1 cl.

813† Psychology as Science and Profession G 3

Orientation for incoming graduate students, including the roles and responsibilities of psychologists, a departmental history, and a sampling of current substantive interests and research methodologies.

Au Qtr. 3 cl. Open only to grad students in psych.

814† Psychophysiology of Behavior Disorders G 3

An examination of current experimental research on the neuro-electrical, neuro-chemical, CNS structural correlates of behavior disorders.

Wi, Sp Qtrs. 3 cl. Prereq: 502 or 806 or permission of instructor.

815 Decision Processes G 4

Introductory course in the application of statistical decision theory as a normative model and analytic technique in the experimental study of cognitive processes.

Au Qtr. 3 cl. Prereq: Grad standing in psych, undergrad inferential statistics strongly recommended.

816 Human Performance Theory G 4

Research and theory on the discrete and on the continuous cases of human information processing; topics include input processes, central processing functions, and output processes.

Wi Qtr. 3 cl. Prereq: 620 or written permission of instructor.

817 Seminar in Human Performance G 3

Wi, Sp Qtrs. 3 cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

819 Seminars in Industrial and Organizational Psychology G 3

2 cl. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

a—Psychology of Individual Effectiveness. Sp Qtr.
b—Psychology of Organizational Effectiveness. Sp Qtr.

c—Human Motivation. Au Qtr.

d—Theoretical Developments and Issues. Au Qtr.

e—Current Practices and Trends. Wi Qtr.

820 Fundamentals of Factor Analysis G 3

Basic common factor analysis model and its application in psychology; model, communality estimation, factor extraction, orthogonal and oblique rotation, factor scores, interpretation, components analysis.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

821 Seminar in Field and Experimental Research Methods G 3

Logic of the research process, uses and limitations of major research strategies, and application of specific data gathering techniques with special emphasis on field settings.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Permission of instructor, and 821a for 821b, and 821b for 821c. Repeatable to a maximum of 9 cr hrs.

822 Psychological Assessment G 3

A critical survey and evaluation of concepts and techniques of assessment of intelligence, special aptitudes, and personality.

Au Qtr. 3 cl. Prereq: 510.

823 Theory of Test Construction G 3

Review of major approaches including traditional mental test theory, assessment theory, and decision theory in relation to constructing and use of various types of tests.

Sp Qtr. 3 cl. Prereq: 511 or 611 or equiv.

824 Seminar in Psychological Measurement

Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs in any combination of decimal subdivisions.

824.01 Measurement of Cognitive Functions G 2

Sp Qtr.

824.02* Models for Psychophysics G 2-4

Wi Qtr.

824.03 Models for Psychological Scaling G 2-4

Sp Qtr.

824.04 Models for Psychological Testing G 2**824.05 Models for Interpersonal Analysis G 2**

Au Qtr.

825 Statistics in Psychology I G 4

First of a two-quarter sequence in inferential statistics; basic concepts of sets, probability, distributions, and foundations of inference and estimation; special applications to psychology.

Au Qtr. 3 cl, 2 lab hrs. Prereq: Grad standing in psych.

826 Statistics in Psychology II G 4

Continuation of 825; theoretical justification and uses of various inferential techniques; topics: t , x^2 , F distributions, correlation and regression, non-parametric techniques.

Wi Qtr. 3 cl 2 lab hrs. Prereq: 825 or equiv.

827 Analysis of Variance G 4

A coverage of statistical inference in analysis of variance designs; analysis of variance designs include randomized blocks, repeated measures, mixed models, and related contrast tests.

Sp Qtr. 4 cl. Prereq: 825 and 826, or equiv.

828 Correlational Analysis G 4

Techniques and rationale of using quantitative and qualitative data for prediction; test and battery analysis and validation.

Au Qtr. 4 cl. Prereq: 810 or permission of instructor.

829 Quantitative Foundations of Psychological Statistics G 4

Principles and techniques for deriving statistical equations; their modification to handle special cases; clarifying assumptions and their application.

Wi Qtr. 4 cl. Prereq: 510 or equiv.

831 Seminars in Psychological Statistics G 2-5

2-5 cl. Prereq: Written permission of instructor. Repeatable to a maximum of 18 cr hrs. Subdivisions a, d, f, g, h, and i are offered every other year.

a —Analysis of Variance

b —Experimental Design. Au Qtr.

c —Factor Analysis. Sp Qtr.

d —Mathematical Models and Theory

e —Non-Parametric Statistics. Sp Qtr.

f —Advanced Experimental Design

g —Advanced Multivariate Analysis

h —Computer Simulation Research

i —Current Practices and Trends. Su, Wi, Sp Qtrs.

833 Methodological Problems in Developmental Psychology G 3

A bridge from formal statistics to current research in developmental and educational psychology with repeated measure, time series data, indices of change, etc.

Sp Qtr. 3 cl. Prereq or concur: 826 and 827 or equiv with written permission of instructor. Repeatable to a maximum of 6 cr hrs.

834 Psychology of Infancy G 3

Psychological development during the first four years of life with particular reference to neonatal period and research methodology in studies involving infants.

Au Qtr. 3 cl. Prereq: 837 or permission of instructor.

Not open to students with credit for 550.

835 Child Development G 3

Major developmental aspects of childhood; review of theory, methodology, research studies, and historical and contemporary writing about children; consideration of interdisciplinary approaches.

Au Qtr. 3 cl. Prereq: 837 or permission of instructor.

836 Adolescent Development G 3

Major developmental aspects of adolescence; review of theory, methodology, research studies, and historical and contemporary writing about adolescents; consideration of interdisciplinary approaches.

Sp Qtr. 3 cl. Prereq: 837 or permission of instructor.

837 Nature and Direction of Human Development G 3

Critical consideration of human development, selected theories and methods of investigation including units of measurement; emergence of mind considered through the phylogenetic and ontogenetic sequence.

Au Qtr. 3 cl.

838 Interaction of Developmental Learning Functions G 2

Relation of empirical data on imprinting, sensory and motor deprivation, and environmental extensions upon theoretical construction designed to integrate such data.

Wi Qtr. 2 cl. Prereq: 550 or 835 and 600 or 671 or equiv.

839† Comparative Child Rearing Practices G 3

Comparative survey of familial and community childbearing practices in modern and primitive cultures; psychological and theoretical implications of various practices; review of research methodology.

Wi Qtr. 3 cl. Prereq: 835 and 836 or equiv, and Anthro 520 and permission of instructor.

840 Practicum in Developmental Psychology G 3-9

Observation of children in a representative variety of clinical settings with particular reference to developmental phenomena of growth and behavior; application of research, diagnostic and intervention methodology.

Su, Au, Wi, Sp Qtrs. 1 cl, lab hrs. Prereq: 2nd yr grad standing in Psych; 837, 838 and permission of instructor. Repeatable to a maximum of 9 cr hrs.

841 Proseminar in Developmental Literature G 3

Group tutorial introduction, historical and modern, to the phylogenetic and ontogenetic literature of developmental psychology.

Au, Wi, Sp Qtrs. 1 cl, 3 lab hrs. Repeatable to a maximum of 9 cr hrs.

842 Seminar in Developmental Psychology G 3

2 cl. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs. Subdivisions d, e, f, g, h, i, j, and k will not be offered this year.

- a —Current Theoretical Issues. Au, Wi, Sp Qtrs.
- b —Development of Dimensions of Cognitive Functions. Au, Sp Qtrs.
- c —Development of Social Attitudes and Values. Au, Sp. Qtrs.
- d —Cultural Influences on Human Development. Sp Qtr.
- e —Psychological Variables in Growth. Au Qtr.
- f —Development of Creative Behavior. Au Qtr.
- g —Deviate Behavior in Childhood and Adolescence Au Qtr.
- h —Phylogenesis
- i —Aging and Senescence
- j —Sequential Phenomena of Growth and Degeneration
- k —Developmental Aspects of Language

843 Theories of Human Development G 3

Comparative presentation of significant major historical and modern developmental theories with specific evaluation of their relevance in the formulation of a comprehensive psychological theory.

3 cl. Prereq: 837 and 2nd yr grad standing.

843.01 Analytic and Social Learning Theory

Wi Qtr.

843.02 Cognitive, Organic and Structural Theories

Sp Qtr.

844 Psychopathology of Childhood G 3

A study of psychopathological conditions of childhood, such as autism, schizophrenia, neurosis, acting out, and behavior problems from a developmental point of view.

Wi Qtr 3 cl. Prereq: 837 and written permission of instructor.

844.01 Concepts**844.02 Disturbances****845 Child Psychotherapies G 3**

Study of several major modes of psychotherapy with children; consideration of theoretic foundations, principal techniques, range of applicability, and presumed means of effecting change.

Wi Qtr. 1 2½-hr cl. Prereq: 844 or equiv and permission of instructor.

846 Advanced Educational Psychology G 3

Critical consideration of research and theory in developmental learning and measurement as relevant to education; special attention to historical positions,

assumptions, and current literature.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

847 Psychological Problems in Higher Education G 2

Designed to give graduate students preparing for college teaching positions contact with current educational research regarding the psychological problems they will encounter.

Sp Qtr. 2 cl. Prereq: Written permission of instructor.

848 Seminar in the College Teaching of Educational Psychology G 2

The objectives of educational psychology in teacher education; a presentation of practical problems in organization, development, and evaluation of undergraduate courses in educational psychology.

Au, Wi, Sp Qtrs. 2 cl. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs.

849 Seminar in Educational Psychology G 3

Au, Wi, Sp Qtrs. 3 cl. Prereq: Written permission of instructor. Repeatable to a maximum of 30 cr hrs.

850 Adaptive Behavior and Developmental Disability G 3

Overview of the psychology of adaptation and its relationship to the classification, assessment, and modification of mental retardation and developmental disability.

Sp Qtr. 3 cl. Prereq: 857 or permission of instructor.

852† Behavioral Change Techniques with Children G 3

Research and theory on behavior change methodology; practice with behavior change techniques.

Wi, Sp Qtrs. 1 cl 4 lab hrs. Prereq: 571 or equiv, 600 and permission of instructor.

852.01 Behavior Modification

Theory and practice of behavior modification; emphasis on experience with individual children and consultation within the school setting.

852.02 Group Behavior Modification

Theory and practice of group behavior modification, with an emphasis on the management of classroom behavior.

853 Psychology of the Exceptional Child and Adult G 3

Review and evaluation of theoretical and research literature concerning exceptional children and adults.

Su Qtr. 3 cl. Prereq: 571 and permission of instructor.

855 Child Behavior Assessment and Consultation G 3

Theory of psychological assessment and consultation; practice in observation, interviewing, testing, documentation of behavior, writing reports and consulting on the learning and behavioral problems of children

855.01 Assessment of Intelligence

Theories of cognitive functioning; practice with individual intelligence tests.

3 cl. Prereq: Permission of instructor.

855.02† Psychodiagnostic Assessment I

Psychodiagnostic assessment with major emphasis on administration, scoring and utilization of the Rorschach psychodiagnostic technique.

Au Qtr. 3 cl. Prereq: 850, 2nd yr grad standing in psych and permission of instructor.

855.05 Psychodiagnostic Assessment II

Psychodiagnostic assessment with major emphasis on the TAT; administration, scoring and utilization.

Wi Qtr. 3 cl. Prereq: 850, 855.02 or permission of instructor. 2nd yr grad standing in psych.

855.06 Psychodiagnostic Assessment III

Psychodiagnostic assessment with major emphasis on the Draw-a-Person Test, and the Bender-Gestalt Test; administration, scoring and utilization, and relationship to other tests.

Sp Qtr. 3 cl. Prereq: 850, 855.02, 855.05, or permission of instructor. 2nd yr grad standing in psych.

857 Psychological Problems in Mental Retardation G 4

Advanced study of psychological aspects of mental retardation; topics include theories of mental retardation, studies of sensory and perceptual processes, cognitive chronically ill and neurologically impaired.

Au Qtr. 4 cl. Prereq: Permission of instructor.

858† Psychological Problems in Physical Disability G 4

Advanced study of cognitive and non-cognitive functioning in those with motor and sensory disabilities, and the chronically ill and neurologically impaired.

Sp Qtr. 4 cl. Prereq: Permission of instructor.

859 Seminars in the Psychology of Exceptional Children and Adults G 3

Advanced topics in research strategies and methodology; specialized topics on the growing edge of the psychology of exceptional children and adults.

Wi, Sp Qtr. 2 cl. Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs.

860† Theories of Personality G 3

A critical consideration of the theories of personality structure psychology.

Au Qtr. 3 cl. Prereq: Advanced work in personality and social psych and permission of instructor.

861 Clinical Psychology

Introduction to the theory and use of clinical methods in psychology, designed for first-year graduate students in clinical psychology.

Prereq: Permission of instructor.

861.01 Lecture G 3

Au Qtr. 3 cl. Repeatable to a maximum of 9 cr hrs.

861.02 Seminar and Practicum G 2

Au. Qtr. 1 or 2 cl. and/or 2-4 lab hrs. Repeatable to a maximum of 6 cr hrs.

862 Problems of Human Behavior

Introduction to the study of human behavior problems; practicum involves observation and participation in field settings.

Prereq: Permission of instructor.

862.01 Lecture G 3

Wi Qtr. 2 cl. Repeatable to a maximum of 6 cr hrs.

862.02 Practicum G 1 or 2

Wi Qtr. 2-4 lab hrs. Repeatable to a maximum of 6 cr hrs.

863 Psychological Dynamics

Special topics in the study of behavior.

Prereq: Permission of instructor.

863.01 Lecture G 3

Sp Qtr. 3 cl. Repeatable to a maximum of 9 cr hrs.

863.02 Practicum G 2

Sp Qtr 2-4 lab hrs. Repeatable to a maximum of 6 cr hrs.

864 Psychological Appraisal

Concepts and procedures for appraising human behavior.

Prereq: Permission of instructor. Courses (except 864.01) ordinarily involve both classroom and practicum experiences.

864.01* Lecture G 3

Theories and methods of psychological appraisal; integration of different theories and approaches.

Sp Qtr. 3 cl.

864.02* Cognitive Appraisal G 1-4

Sp Qtr. 1-4 cl. and/or 8 lab hrs. Repeatable to a maximum of 8 cr hrs.

864.03* Projective Appraisal G 1-4

Wi Qtr. 1-4 cl. and/or 2-8 lab hrs. Repeatable to a maximum of 8 cr hrs.

864.04* Actuarial Appraisal G 1-4

Wi Qtr. 1-4 cl. and/or 2-8 lab hrs. Repeatable to a maximum of 8 cr hrs.

864.05* Behavior Analysis G 1-4

Au Qtr 1-4 cl. and/or 2-8 lab hrs. Repeatable to a maximum of 8 cr hrs.

864.06* Special Topics G 1-4

Su Qtr. 1-4 cl. and/or 2-8 lab hrs. Repeatable to a maximum of 8 cr hrs.

865 Group Interventions G 1-5

Principles and practices of intervention through group processes.

Su, Au, Wi, Sp. Qtrs. 1-5 cl and/or 2-10 lab hrs. Prereq: Permission of instructor. Courses ordinarily involve both classroom and practicum experience. Each decimal subdivision repeatable to a maximum of 15 cr hrs.

865.01 Group Psychotherapy**865.02 Family Therapy****865.03 Interventions in Organized Groups****865.04 Encounter Group Processes****865.05 Novel and Experimental Group Processes****866 Interventions with Individuals G 1-5**

Concepts and practices of various interventions into the troubled behavior of individuals.

Su, Au, Wi, Sp. Qtrs. 1-5 cl and/or 2-10 lab hrs. Prereq: Permission of instructor. Courses ordinarily involve both classroom and practicum experience. Each decimal subdivision repeatable to a maximum of 15 cr hrs.

866.01 Individual Psychotherapy**866.02 Behavior Modification****866.03 Existential and Humanistic Approaches****866.04 Novel and Experimental Approaches****867 Seminar in Clinical Abnormal Psychology G 2 or 4**

Au, Wi, Sp Qtrs. 2 cl. Prereq: Permission of instructor. Two sections may be offered in any one qtr.

868 Community Psychology G 5

Integrate ecological, social and interpersonal variables in the analysis and change of behavior; active involvement in the development of community programs and related research.

Au, Wi, Sp Qtrs. 2 cl, 6 lab hrs. Prereq: Written permission of instructor. Repeatable to a maximum of 30 cr hrs. Students are encouraged to enroll for 2 or more quarters.

869 Research Methodology G 2

Discussion of conceptual and methodological issues related to the ongoing work of graduate students and faculty.

Au, Wi Qtrs. 2 cl. Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs.

870 Advanced Social Psychology G 3

Problems of learning and perception relative to the social environment, the influence of culture in the development of individual behavior patterns, and related topics.

Au Qtr. 3 cl. Prereq: 25 cr hrs in psych including 320 and 802 or 600 or equiv.

871* Counseling and Therapy as a Social Institution G 3

A review of diverse helping practices as belief and ritual, with emphasis upon their functions in American society.

Au Qtr. 3 cl.

872 Social Psychology Laboratory G 3-12

Advanced training in methods and data collection in the areas of social psychology, laboratory, and field experience.

Au, Wi, Sp Qtrs. 2 cl, 2 lab hrs. for each additional cr hr. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

873 Seminar in Social Psychology G 3

3 cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs. Subdivisions b, c, d, and f offered every other year.

- a—Contemporary Attitude Theory and Research. Wi Qtr.
- b—Social Structure and Personality. Sp Qtr.
- c—Systematic Theory in Social Psychology. Su Qtr.
- d—The Psychology of Social Movements. Wi Qtr.
- e—Current Research Trends. Wi Qtr.
- f—Group Processes. Wi, Sp Qtrs.

874 Cognitive Processes G 3

Theories of complex information processing functions and their acquisition; special attention to the role of language in complex perceptual and motor performances.

Sp Qtr. 3 cl. Prereq: 20 cr hrs in psych or permission of instructor.

875 Practicum in Social Psychology G 4

Survey and supervised experience in using the technique and research designs of social psychology. Au, Wi, Sp Qtrs. 2 cl, 2 lab hrs. Prereq: Grad standing in psych or permission of instructor.

875.01 Practicum in Social Psychology I

Wi Qtr.

875.02 Practicum in Social Psychology II

Sp Qtr.

875.03 Practicum in Social Psychology III

Au Qtr.

877 Human Learning I: Learning G 4

Introductory survey of the theoretical and empirical issues in human learning: emphasis on the analysis of learning tasks and the conditions under which learning occurs.

Au Qtr. 2 2-hr cl.

878 Human Learning II: Memory G 4

Theoretical issues and experimental research on the topic of human memory.

Wi Qtr. 2 2-hr cl.

879 Human Learning III: Cognitive Processes G 4

Theoretical and experimental research in several areas of cognition including concept learning, problem solving, and reasoning.

Sp Qtr. 2 2-hr cl.

881 Social Ecology: Implications for Counseling G 4

Advanced graduate students relate person-environment interaction theory to practice in counseling, educational, and community settings.

Sp Qtr. 2 cl. Prereq: Written permission of instructor.

882 Psychology of Counseling**882.01 Lecture G 3**

Theoretical, research, cultural and professional bases for counseling; fundamentals of interviewing; counseling procedures and techniques. Su, Au, Wi, Qtrs. 3 cl. Prereq: 13 cr hrs in psych.

882.02 Laboratory G 2

A series of practical exercises designed to apply the principles of the psychology of counseling.

Au, Wi Qtrs. 4 lab hrs. Prereq: Permission of instructor.

883 Counseling Diagnostics**883.01 Lecture G 3**

Theory and application of interview data, observed behavior, test results, and biographical information as a basis for diagnostics in counseling and evaluation.

Wi Qtr, 3 cl. Prereq: 13 cr hrs in psych.

883.02 Laboratory G 2

Survey of specific diagnostic techniques and tests and application through role playing.

Wi, Sp Qtrs. 4 lab hrs. Prereq: Permission of instructor.

884 Psychology of Career Development**884.01 Lecture G 4**

A survey and critical analysis of literature and research regarding effects of sequence of work activity, vocational exploration, and career development.

Sp Qtr. 4 cl.

884.02 Laboratory G 2

A series of practical exercises designed to apply the principles of the psychology of career development.

Su, Sp Qtrs. 1 2-hr lab. Prereq: 882 or equiv and written permission of instructor.

885 Beginning Practicum in Counseling G 4

Supervised practice in assisting college students in their adjustment to college; emphasis on diagnosis and treatment; special help given to interviewing procedures.

Au, Wi, Sp Qtrs. 2 cl, 8-10 lab hrs. Prereq: 883 and written permission of instructor. Repeatable to a maximum of 6 cr hrs.

886 Advanced Practicum in Counseling G 4

Supervised practice in (a) assisting college students and adults with problems of personality adjustments or (b) supervising techniques through observation and discussion of work with other counselors.

Au, Wi, Sp Qtrs. 2 cl, 8-10 lab hrs. Prereq: 885 and written permission of instructor. Repeatable to a maximum of 9 cr hrs.

887 Seminar in Counseling Psychology G 3

Su, Au, Wi, Sp Qtrs. 2 cl. Prereq: Written permission of instructor. Repeatable to a maximum of 30 cr hrs.

888 Psychological Study of Individuals and Groups G 3

Basic concepts and techniques of student personnel work.

Wi Qtr. 3 cl. Prereq: Permission of instructor. Not open to students with 6 cr hrs in 650.

899 Interdepartment Seminar G 1-5

See Interdepartmental Seminars.

980 Supervised Field Experience in Psychology G 1-15

Supervised experience, either research or operational, in any agency doing professional psychological work such as a school system, a psychological clinic, an industrial personnel department, or a counseling center.

Su, Au, Wi, Sp Qtrs. Prereq: Psych 2nd yr standing and approval of local staff of area in which student is specializing. Supervised by member of local staff and some member of the outside agency approved by the Dept of Psych. Repeatable to a maximum of 30 cr hrs.

999 Research in Psychology G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

evaluation; conflict management within a public bureaucracy.

Wi, Sp Qtrs. 1 3-hr cl. Prereq: 801 and 802.

804 Seminar on Governmental Information Systems Administration G 3

Critical study of the administration and design of management information systems for public agencies; selected case studies. Lundstedt.

Sp Qtr. 2 1½-hr cl. Prereq: Accting 712 or equiv or permission of instructor.

805 Seminar on Systems Analysis for Public Policy Decisions G 3

Studies in the application of systems analysis to administrative and policy problems in the public sector; selected case studies and problems. Craig and Gorr.

Au Qtr. 2 1½-hr cl. Prereq: 801, 802, 803, 804, Econ 705, and Bus-Mgt 801.02 or permission of instructor.

806 Public Budgeting and Spending Decisions G 3

Budgeting as analysis of resource allocation, planning evaluation, and control; tools of analysis for program budgeting and measurement of program results; case studies.

Wi, Sp Qtrs. 2 1½-hr cl. Prereq: Econ 705 or equiv and Econ 730 or equiv with written permission of instructor.

850 Policy Problem Seminar I G 3

Multidisciplinary seminar integrated with field experience in the solution of actual public administrative and policy problems; organized around problem areas.

Au Qtr. Prereq: Permission of instructor.

851 Policy Problem Seminar II G 3

Continuation of 850.

Wi Qtr. Prereq: 850.

860 Seminar on Advanced Problems in Public Administration G Arr

Special studies of selected problems which may include readings, case studies, internships, field investigations, simulation, system analysis, role playing, team teaching, and other experimental techniques.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs in any one subdivision.

860.01 Comparative Administration

860.02 Correctional Administration

860.03 Defense Policy Administration

860.04 Development Administration

860.05 Fiscal Administration

860.06 Health Services Administration

860.07 Information Systems Administration

860.08 Municipal Administration

860.09 Natural Resources Administration

860.10 Personnel and Labor Relations Administration

860.11 Planning Administration

860.12 Research Administration

860.13 Urban Affairs Administration

860.14 Welfare Administration

860.99 Special

Public Administration

Office: 302 Hagerty Hall, 1775 College Road, 422-8696

800 Research Methods in Public Administration G 3

Methods of research in public administration including the design of thesis and dissertation proposals.

Sp Qtr. 1 2-hr cl.

801 Public Policy Formulation and Administration G 5

Analysis of the operating environment of the public administrator; public policy processes, public organization behavior, and policy formulation in the U.S. federal system.

Au, Sp Qtrs. 2 2-hr cl.

802 Legal Environment of Public Administration G 3

An examination and analysis of the constraints imposed upon public administrative processes by the legal environment including judicial policy-making and the evolving legal order. Lynn.

Wi, Sp Qtrs. 1 3-hr cl.

803 Public Policy Implementation G 3

Policy implication process in a political setting emphasizing planned change; organizational design, systems analytic program management and

893 Individual Studies G 1-6

Advanced individual studies in public administration. Su, Au, Wi, Sp Qtrs. Arr. Prereq: Grad standing in pub adm and written permission of instructor. Repeatable to a maximum of 6 cr hrs in any subdivision.

- 893.01 Comparative Administration
- 893.02 Correctional Administration
- 893.03 Defense Policy Administration
- 893.04 Development Administration
- 893.05 Fiscal Administration
- 893.06 Health Services Administration
- 893.07 Information Systems Administration
- 893.08 Municipal Administration
- 893.09 Natural Resources Administration
- 893.10 Personnel and Labor Relations Administration
- 893.11 Planning Administration
- 893.12 Research Administration
- 893.13 Urban Affairs Administration
- 893.14 Welfare Administration
- 893.99 Special

894 Group Studies G 1-6

Advanced group studies in public administration. Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 6 cr hrs in any subdivision.

- 894.01 Comparative Administration
- 894.02 Correctional Administration
- 894.03 Defense Policy Administration
- 894.04 Development Administration
- 894.05 Fiscal Administration
- 894.06 Health Services Administration
- 894.07 Information Systems Administration
- 894.08 Municipal Administration
- 894.09 Natural Resources Administration
- 894.10 Personnel and Labor Relations Administration
- 894.11 Planning Administration
- 894.12 Research Administration
- 894.13 Urban Affairs Administration
- 894.14 Welfare Administration
- 894.99 Special

899 Interdepartmental Seminar G 1-5

Two or more departments may collaborate in presenting seminars on subjects of mutual interest; topics to be announced.

Au, Wi, Sp Qtrs. Arr. Repeatable by written permission.

998 Research in Public Administration: Thesis G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 6 cr hrs.

999 Research in Public Administration: Dissertation G Arr

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 45 cr hrs.

Radiologic Technology

School of Allied Medical Professions.

Office: 340 School of Allied Medical Professions Building, 1583 Perry Street, 422-0571

201 Introduction to Radiologic Technology U 2

An orientation to radiologic technology including the history of the profession, responsibilities of the technologist, professional development, radiation protection, areas of specialization, and hospital organization. Vogelsong.

Su Qtr. 2 cl. Prereq: Permission of instructor.

411 Radiographic Procedures I U 4

Analysis of theory in radiography of the chest, abdomen and appendicular skeleton with application of theory in the laboratory. Finney.

Su Qtr. 3 cl, 1 2-hr lab. Prereq: Written permission of instructor; concur: 440.

412 Radiographic Procedures II U 4

Continuation of 411 emphasizing the bony thorax, vertebral column, pelvis, and skull. Finney.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: Written permission of instructor; concur: 440.

420 Radiographic Processing U 3

A study of the photographic process, including processing methodology and the effects of the chemical components on the radiographic film. Ballinger.

Au Qtr. 2 cl, 1 2-hr lab. Prereq: Permission of instructor.

430 Radiographic Exposure U 4

Presents theory to establish radiographic exposure values while emphasizing radiographic quality and the accessory equipment used in the production of a satisfactory radiograph. Finney.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: Permission of instructor.

440 Applied Radiologic Technology I U 6

Clinical application of radiographic technics in the Radiology Department. Vogelsong.

Su, Au, Wi, Sp Qtrs. 24 hrs clinical experience. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

471 Radiologic Physics I U 3

An analysis of the production of X-rays including X-ray circuitry. Dare.

Au Qtr. 2 cl, 1 hr rec. Prereq: Physics 112 or permission of instructor.

472 Radiologic Physics II U 3

A continuation of 471, emphasizing the interaction of radiation with matter, units of radiation measurement, and radiation protection. Dare.

Wi Qtr. 2 cl, 1 2-hr lab. Prereq: 471 or permission of instructor.

530 Advanced Radiographic Exposure U 3

In-depth study in establishing radiographic exposure values in new installations of when equipment is changed. Finney and Ballinger.

Au Qtr. 2 cl, 1 2-hr lab. Prereq: Permission of instructor.

540 Applied Radiologic Technology II U 6

Continuation of 440 emphasizing the more complex radiographic procedures. Vogelsong.

Su, Au, Wi, Sp. Qtrs. 24 hrs clinical experience. Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs.

555 Nuclear Medicine Technology U 5

Identification of radioactive pharmaceuticals and a study of their use in patient diagnosis with application of theory in the nuclear medicine laboratories. Gerdes.

Sp Qtr. 1 cl, 12 hrs clinical experience. Prereq: Permission of instructor.

556 Pediatric Radiography U 5

Analysis of theory in pediatric radiography with application in the clinical facilities of Children's Hospital. Claggett and Moody.

Sp Qtr. 1 cl, 12 hrs clinical experience. Prereq: Permission of instructor.

557 Radiation Therapy Technology U 5

Comparison of the various methods of administering radiation in the treatment of disease with application in the radiation therapy center. Kelch and Neuman.

Sp Qtr. 1 cl, 12 hrs clinical experience. Prereq: Permission of instructor.

565 Department Operation U 2

A study of the structure and operation of departments of radiology. Ballinger.

Wi Qtr. 1 2-hr cl. Prereq: Permission of instructor.

590 Special Radiographic Procedures U 4

Theory and clinical experience in cardiovascular, neurological, and other specialized radiographic procedures. Vogelsong.

Wi Qtr. 2 cl, 8 hrs clinical experience. Prereq: Permission of instructor.

615 Radiographic Clinic Correlations U P G 3

The fundamentals of radiographic diagnosis; emphasis on the correlation of the patient's medical history with the radiographic findings. Vogelsong, Mueller, and staff.

Au Qtr. 3 cl. Prereq: Permission of instructor.

Radiology

Office: N-212 University Hospital, 410 West 10th Avenue, 422-7100

670 Medical Radiation Physics U P G 2

Ionizing radiations, their production, properties and interaction with materials of medical interest; physical principles of radiation therapy, radiation dosimetry, and radiation protection.

Sp Qtr. 2 cl. Prereq: Permission of instructor.

680 Radiation Biology U P G 2

Effect of ionizing radiation in biological systems at the molecular, cellular, organ, organism, and community

levels with special emphasis on medical implications and radiation safety.

Au Qtr. 2 cl. Prereq: Permission of instructor.

740 Clinical Radiology P 6, 12, 18

Participation in special seminars and clinics; optional research project.

1, 2, 3, or 4 months; offered all months except June, July, Aug. Prereq: Permission of instructor.

Repeatable to a maximum of 24 cr hrs.

a—Radiologic Diagnosis

b—Radiation Therapy

793 Individual Studies P 6, 12, 18

Graduated participation in diagnostic and therapeutic radiology; optional research project after 6 credit hours in 793.

1, 2, 3, or 4 months; offered all months except June, July, and Aug. Prereq: Permission of instructor.

Repeatable to a maximum of 24 cr hrs.

999 Research in Radiology G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

Respiratory Technology

School of Allied Medical Professions

Office: 431 School of Allied Medical Professions Building, 1583 Perry Street, 422-8445

320 Components of Respiratory Health U 5

A survey of normal respiratory mechanisms with specific consideration for the basis of respiratory therapeutics, the respirable environment and the role of the technologist. Downey.

Au Qtr. 5 cl. Prereq: Admission to the Resp Tec Division. Not open to students with credit for 480.05.

400 Therapeutics I U 5

Study of theory and application of oxygen, humidity and aerosol therapy, medical regulators, flowmeters, safety regulations for compressed gasses, oxygen administering appliances, and oxygen analyzers. Downey.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: 320 or 480.05. Not open to students with credit for 480.10.

420 Therapeutics II U 3

Examination of theory and application of, and alternatives to Intermittent Positive Pressure Breathing therapy; indications for assisted ventilation and principles employed in the operation of different IPPB devices.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: 400. Not open to students with credit for 480.20.

440 Continuous Ventilatory Management of Respiratory Failure U 5

Study of respiratory failure and continuous mechanical ventilation emphasizing bedside ventilatory volumetric monitoring, interpretation of blood gases, weaning procedures and principles employed in the operation of mechanical ventilators.

Su Qtr. 3 cl, 2 2-hr labs. Prereq: 420. Not open to students with credit for 480.30.

460 Pulmonary Function and Blood Gas Analysis U 5

Study of theories, interpretations and procedures for pulmonary function testing and arterial blood gas analysis with consideration of mechanical and electronic principles of testing equipment. Douce. Su Qtr. 3 cl, 2 2-hr labs. Prereq: 320 or 480.05.

489 Clinical Experience

Su, Au, Wi, Sp Qtrs. 4-8 hr/wk. Prereq: Admission to the Resp Tec Division. Repeatable to a maximum of 20 cr hrs.

489.01 Introduction to Clinical Respiratory Care U 3

Clinical application of patient care techniques as related to respiratory care. Douce, Downey and staff.

4 hrs lab, 4 hrs clinical.

489.02 Application of Therapeutics I U 2

Clinical application of oxygen, humidity and aerosol therapy; inclusion of compressed gas safety systems, oxygen analyzers and sterilization. Douce, Downey and staff.

489.03 Application of Therapeutics II U 2

Clinical application of IPPB therapy, its alternatives and assisted ventilation. Douce, Downey and staff..

489.04 Continuous Ventilation U 2

Clinical application of continuous ventilation; initiating, monitoring and maintaining various ventilators. Douce, Downey and staff.

489.05 Pulmonary Function U 2

Clinical application of various techniques and procedures involved in pulmonary function testing and arterial blood gas analysis. Conkle.

489.06 Pediatrics U 2

Clinical application of pediatric respiratory therapeutics. Davis and Douce.

489.07 Intubation and Airway Management U 2

Clinical application of techniques and procedures involved with intubation and airway management. Beach, Tipirneni and Shoemaker.

489.08 Pulmonary Rounds U 2

Clinical exposure to and participation in case study presentations of various pulmonary systems dysfunctions. Inglis.

8 hrs/wk.

489.09 Department Management U 1

Clinical application of departmental management with emphasis on organization, supervision, and evaluation. Douce.

500 Pediatric Respiratory Technology U 3

Neonatal and pediatric pulmonary pathophysiology with consideration of the necessary adaptations of equipment and therapeutics for application to the pediatric patient. Douce.

Au Qtr. 3 cl. Prereq: 440.

589 Clinical Practicum U 10

Clinical application and integration of respiratory therapeutics within an accredited respiratory therapy department under medical and technical supervision. Downey.

Su, Au, Wi, Sp Qtrs. 40 hrs/wk. Prereq: Written permission of instructor and satisfactory completion of all respiratory technology professional courses.

595 Seminar U 1-5

Conferences, group discussions, and presentations of selected topics. Douce.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor.

Romance Linguistics

Office: 248 Dieter Cunz Hall of Languages, 1841 Millikin Road, 422-5842

811 Romance Linguistics I G 5

A general survey of the development of the Romance languages and an introduction to the basic materials and techniques of investigation. Keller.

Au Qtr. 5 cl. Prereq: Permission of instructor.

812 Romance Linguistics II G 5

Topics and problems, both synchronic and diachronic; special attention to the minor Romance languages. Keller.

Wi Qtr. 5 cl. Prereq: 811 or permission of instructor.

831* Seminar in Romance Linguistics G 3-5

Griffin.

Sp Qtr. Prereq: Permission of instructor.

893 Individual Studies G 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

894 Group Studies G 1-15

Investigation of minor problems in the various fields of Romance Linguistics.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 30 cr hrs.

999 Research in Romance Linguistics G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

Romanian

Office: 248 Dieter Cunz Hall of Languages, 1841 Millikin Road, 422-5842

101 Elementary Romanian U 5

Extensive practice in the basic language skills. Botoman.

Au Qtr. 5 cl.

102 Elementary Romanian U 5

The elements of Romanian grammar with oral and written exercises; development of conversational skill; reading, vocabulary building, attention to Romanian idioms. Botoman.

Wi Qtr. 5 cl. Prereq: 101.

111 Intensive Intermediate Romanian U 10

An intensive course that combines the content of two quarters of Romanian to complete the presentation of the basic Romanian grammar and readings based on Romanian geography, history, and customs. Botoman.

Sp Qtr. 5 2-hr cl. Prereq: 102. Equiv to the third and fourth courses of the foreign language sequence; successful completion of 101-102-111 fulfills the Arts and Sciences foreign language requirement.

Rural Sociology

Office: 103 Agricultural Administration Building, 2120 Fyffe Road, 422-7911

105 Introduction to Rural Sociology U 5

Principles of society, major social institutions and social change; emphasizes social changes in rural life, rural organizations, population, and family living. Buttell, Flynn, Mitchell, Napier, and Thomas.

Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for Sociol 101 or 201.

110 Socio-Economic Systems in Rural America U 5

A study of our rural socio-economic systems, the individual's interaction within these systems, and the impact of societal decisions on resource use and control. Adams, Graham, Hitzhusen, Shaudys, Stout, and Thomas.

Au, Wi, Sp Qtrs. 5 cl. Cross-listed in Agr Econ.

205 Our Changing Rural Society U 3

An examination of factors contributing to the maintenance of rural social systems and the conditions that facilitate change. Flynn, Napier and Thomas.

Wi Qtr. 3 1-hr cl. Prereq: 105 or Sociol 101.

General Prerequisites for Courses Numbered 300 and 400

Unless otherwise indicated, the prerequisites for 300 and 400-level courses are 90 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-399.

320 The Rural Family U 5

Structure and functions of rural families in changing societies. Phillips.

Au Qtr. 5 cl. Prereq: 105, Sociol 101, or 201. Not open to students with credit for 310.

342 Rural Leadership U 3

Basic principles and practices in the development of effective leadership in organization and community action programs; power structures and levels of leadership are examined. Mitchell.

Wi Qtr. 1 2-hr cl, 1 2-hr lab. Prereq: 105, Sociol 101, or 201. Not open to students with credit for 317.

489 Internship in Rural Sociology U 3-5

Supervised experience with an approved firm or organization. Written comprehensive report required.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of major advisor. Repeatable to a maximum of 10 cr hrs.

General Prerequisites for Courses Numbered 500

Unless otherwise indicated, the prerequisites for 500-level courses are 15 cr hrs in courses in the same discipline numbered 200 or higher, 10 cr hrs in courses numbered 200 or higher in the same discipline, plus 10 cr hrs in courses numbered 200 or higher in specified allied disciplines; or baccalaureate degree.

542 Rural Social Organization U G 5

Elements of social organization, functions of formal and informal social systems, process of making

decisions in communities; analysis of actual rural community. Mitchell.

Au Qtr. 4 cl, 1 2-hr lab. Not open to students with credit for 316.

562 Diffusion of Information on Agricultural Technology U G 3

The process by which new ideas diffuse to the farmer and homemaker; emphasis on the role of group influences, professional agricultural workers, and adoption leaders. Flynn.

Sp Qtr. 3 cl. Not open to students with credit for 421.

593 Individual Studies U G 2-5

Su, Au, Wi, Sp Qtrs. H593 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Prereq: Permission of instructor.

Repeatable to a maximum of 15 cr hrs in any or a combination of decimal subdivisions.

593.01 Human Population Problems

593.02 Rural Family

593.03 Rural Health

593.04 Rural Leadership

593.05 Rural Community and Institutions

593.06 Community Development

593.07 Diffusion of Technology

593.08 Research Methods in Rural Sociology

593.09 Social Organization and Administrative Problems

593.10 Sociology of Foreign Areas

593.11 Rural Church

593.12 Farmer Organizations

593.13 General Rural Sociology

593.14 Rural Social Problems

General Prerequisites for Courses Numbered 600

Unless otherwise indicated, the prerequisites for 600-level courses are 15 cr hrs in courses in the same discipline numbered 300 or higher, or 10 cr hrs in courses numbered 300 or higher in the same discipline, plus 10 cr hrs in courses numbered 300 or higher in specified allied disciplines.

642 Advanced Rural Sociology U G 5

A comparative analysis of rural-urban social systems. Analysis of the decline of rural-urban differences and the development of interdependency among rural-urban subsystems. Napier.

Au Qtr. 2 2-hr cl. Prereq: 15 cr hrs in rural soc and/or sociol at the 300 level or higher. Not open to students with credit for 600.

662 Rural Sociology of Developing Societies U G 3

Sociological principles applied to analysis of present social systems and institutions of developing nations for students preparing for foreign service with rural societies. Flynn.

Wi Qtr. 3 cl. Prereq: 105, Sociol 101, or 201. Not open to students with credit for 422.

666 Rural Poverty U G 3

Evaluation of the factors which tend to create and perpetuate social and economic deprivation. The socio-economic conditions of poverty subgroups are analyzed in depth. Buttell and Napier.

Sp Qtr. 1 2-hr cl. Prereq: 15 cr hrs in rural soc or related social science.

693 Individual Studies U G 2-5

Su, Au, Wi, Sp Qtrs. H693 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs in any or a combination of decimal subdivisions.

- 693.01 Human Population Problems
- 693.02 Rural Family
- 693.03 Rural Health
- 693.04 Rural Leadership
- 693.05 Rural Community and Institutions
- 693.06 Community Development
- 693.07 Diffusion of Technology
- 693.08 Research Methods in Rural Sociology
- 693.09 Social Organization and Administrative Problems
- 693.10 Sociology of Foreign Areas
- 693.11 Rural Church
- 693.12 Farmer Organizations
- 693.13 General Rural Sociology
- 693.14 Rural Social Problems

694 Group Studies U G 2-4

An intensive study of a selected area in rural sociology appropriate to the needs of the group not provided in other courses. Each decimal subdivision repeatable to a maximum of 8 cr hrs.

- 694.01 Human Population Problems
- 694.02 Rural Family
- 694.03 Rural Health
- 694.04 Rural Leadership
- 694.05 Rural Community and Institutions
- 694.06 Community Development
- 694.07 Diffusion of Technology
- 694.08 Research Methods in Rural Sociology
- 694.09 Social Organization and Administrative Problems
- 694.10 Sociology of Foreign Areas
- 694.11 Rural Church
- 694.12 Farmer Organizations
- 694.13 General Rural Sociology
- 694.14 Rural Social Problems

General Prerequisites for Courses Numbered 700

Unless otherwise indicated, the prerequisites for 700-level courses are 15 cr hrs in courses in the same discipline numbered 400 or higher, plus additional specified course(s) numbered 600 or higher.

796 Seminars in Rural Sociology U G 2-4

Au, Wi, Sp Qtrs. Prereq: 15 cr hrs in rural soc and/or social or permission of instructor. Each decimal subdivision repeatable to a maximum of 8 cr hrs.

- 796.01 Human Population Problems
- 796.02 Rural Family
- 796.03 Rural Health
- 796.04 Rural Leadership
- 796.05 Rural Community and Institutions
- 796.06 Community Development
- 796.07 Diffusion of Technology
- 796.08 Research Methods in Rural Sociology
- 796.09 Social Organization and Administrative Problems
- 796.10 Sociology of Foreign Areas
- 796.11 Rural Church
- 796.12 Farmer Organizations
- 796.13 General Rural Sociology
- 796.14 Rural Social Problems

General Prerequisites for Courses Numbered 800 and 900

Unless otherwise indicated, the prerequisites for 800 and 900-level courses are 30 cr hrs in courses in the same discipline, or 20 cr hrs in the same discipline, plus 25 cr hrs in specified allied disciplines.

888 Social Action in Community Development G 3

An analysis of the steps and conceptual areas in the social action process and its application to rural community development. Napier.

Wi Qtr. Arr.

999 Research G Arr

Research for thesis and dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Russian

Office: 232 Dieter Cunz Hall of Languages, 1841 Millikin Road, 422-6733

101 Elementary Russian I

Development of oral and written language skills.

101.01 Classroom Track U 5

5 cl. Students must register for and complete 5 cr hrs during the quarter.

101.05 Individualized Track U 1-5

Students register for and complete from 1 to 5 cr hrs during the quarter. Students who complete 5 cr hrs before the end of the quarter may proceed to 102.05. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement.

102 Elementary Russian II

Development of oral and written language skills.

102.01 Classroom Track U 5

Prereq: 101.01 or 5 cr hrs in 101.02. Students must register for and complete 5 cr hrs during the quarter.

102.05 Individualized Track U 1-5

Prereq: Grade of B- or above in 101.01 or 5 cr hrs of 101.05 or permission of instructor. Student may register for 101.05 and 102.05 concurrently with permission of instructor. Students register for and complete from 1 to 5 cr hrs during the quarter. Students who complete 5 cr hrs before the end of the quarter may proceed to 103.05. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement.

103 Intermediate Russian I

Readings, oral and written practice, grammar review. Students may select from among the following subdivisions which emphasize special areas.

103.01 Classroom Track U 5

Prereq: 102.01 or 5 cr hrs in 102.05. Students must register for and complete 5 cr hrs during the qtr.

103.02 History and Civilization U 5

Emphasis on readings in Russian history and civilization.

Prereq: 102.01 or 5 cr hrs in 102.05. Students must register for and complete 5 cr hrs during the qtr.

103.03 Science U 5

Introductory readings in scientific Russian.

Prereq: 102.01 or 5 cr hrs in 102.05. Students must register for and complete 5 cr hrs during the qtr.

103.04 Economics and Commerce U 5

Introductory readings in Russian economics and commerce.

Prereq: 102.01 or 5 cr hrs in 102.05. Students must register for and complete 5 cr hrs during the qtr.

103.05 Individualized Track U 1-5

Prereq: Grade of B- or above in 102.01 or 5 cr hrs of 102.05 or permission of instructor. Students may register for 102.05 and 103.05 concurrently with permission of instructor. Students register for and complete from 1 to 5 cr hrs during the quarter. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement.

104 Intermediate Russian II U 5

Readings, oral and written practice, grammar review. Students may select from among the following subdivisions which emphasize special areas.

Su, Au, Wi, Sp Qtrs. 5 cl.

104.01 Basic

Balanced use of the four basic skills: reading, oral comprehension, speaking, and writing; emphasis on Russian literary texts.

Prereq: 103.01 or equiv. Not open to students with credit for 104.

104.02 History and Civilization

Emphasis on readings in Russian history and civilization.

Prereq: 103.02 or equiv. Not open to students with credit for 104.

104.03 Science

Readings in scientific Russian.

Prereq: 103.03 or equiv. Not open to students with credit for 104.

104.04 Economics and Commerce

Emphasis on reading Russian texts dealing with economics and commerce.

Prereq: 103.04 or equiv. Not open to students with credit for 104.

112 Intensive Russian U 5, 10, 15

Elementary and intermediate Russian for students desiring comprehensive knowledge of Russian in the shortest possible time.

Su Qtr. 15 cl. Full time of student and full fees required. Prereq: Permission of chairman. Students with credit for 101 or the equiv may not register for more than 10 cr hrs. Students with credit for 101 and 102 or the equiv may not register for more than 5 cr hrs. Students with credit for 103 or the equiv may not register for credit.

135 Introduction to Russian Culture U 5

Russian literature in its cultural context, survey of the relationship of literature, art, music and drama from the beginnings to the present. Kalbous.

Au, Wi, Sp Qtrs. 4 cl, 1 hr arr. Taught in English.

162 Elementary-Intermediate Russian for Selected Students U 5

Successful completion of the sequence 101-162-163 fulfills the Arts and Sciences foreign language requirement.

Wi Qtr. 5 cl. Prereq: Grade of A in 101.

163 Elementary-Intermediate Russian for Selected Students U 5

Successful completion of the sequence 101-162-163 fulfills the Arts and Sciences foreign language requirement and provides eligibility for 400-level courses.

Sp Qtr. 5 cl. Prereq: 162.

220 Russian Literature in English

Translation:

From Pushkin to Turgenev U 5

An introduction to the Russian novel, drama, and poetry; major contributions of Pushkin, Lermontov, Gogol, Ostrovsky, Goncharov, and Turgenev.

Au Qtr. 4 cl, 1 hr arr.

221 Russian Literature in English

Translation: From Dostoevsky to

Andreyev U 5

Reading and analysis of works by Dostoevsky, Tolstoy, Saltykov-Shchedrin, Chekhov, Gorky, Bunin, Bely, and Andreyev.

Wi Qtr. 4 cl, 1 hr arr.

222 Russian Literature in English

Translation: Introduction to Soviet

Literature U 5

A general introduction to Soviet Russian literature from 1917 to the present, in the context of social and political developments in the USSR.

Sp Qtr. 4 cl, 1 hr arr. Not open to students with credit for 522.

405 Russian Conversation and**Composition U 5**

Drill in everyday patterns of conversation and elementary practice in writing.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 104 or permission of instructor. Not open to students with credit for 406.

407 Intermediate Russian Conversation**and Composition U 5**

Review of Russian grammar; written compositions, perfection of pronunciation, translation practice and expansion of vocabulary.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 405 or permission of instructor. Not open to students with credit for 408.

412 Intermediate Intensive Russian**U 5 or 10**

Au Qtr. 10 cl. Prereq: 103, 112, or permission of chairman. The equiv of 104 and 405. Students with credit for 104 may, with permission of chairman, register for 5 cr hrs instead of 10 cr hrs. The course must be taken in its entirety.

505 Intermediate Scientific**Readings U G 3****505.01 Social and Behavioral Sciences**

Reading of Russian materials in the social and behavioral sciences: emphasis will be on language common to all fields.

Wi Qtr. 3 cl. Prereq: 104.02 or 104.04 or equiv or permission of instructor.

505.02 Physical and Biological Sciences

Reading of Russian materials in the physical and biological sciences: emphasis will be on language common to all fields.

Wi Qtr. 3 cl. Prereq: 104.03 or equiv or permission of instructor.

506 Advanced Scientific Readings U G 3**506.01 Social and Behavioral Sciences**

Reading of Russian materials in the social and behavioral sciences; attention will be given to problems which are peculiar to individual fields.

Sp Qtr. 3 cl. Prereq: 505.01 or permission of instructor.

506.02 Physical and Biological Sciences

Reading of Russian materials in the physical and biological sciences; attention will be given to problems which are peculiar to individual fields.

Sp Qtr. 3 cl. Prereq: 505.02 or permission of instructor.

522 Russian Literature in English**Translation: Soviet Literature U G 5**

A survey of Soviet Russian literature from 1917 to the present; reading of representative authors such as Fadееv, Leonov, Fedin, Sholokhov, and Pasternak.

Sp Qtr. 4 cl. Prereq: Grad standing or permission of instructor. Not open to students with credit for 222.

551 Introduction to Russian Literature: Romanticism and Naturalism U G 3

Readings from representative authors such as Pushkin, Lermontov and Gogol.

Au Qtr. 3 cl. Prereq: 407 or equiv with written permission of instructor. Conducted in Russian.

552 Introduction to Russian Literature: The Russian Realists U G 3

Readings from representative authors such as Turgenev, Dostoevsky, Tolstoy, and Goncharov.

Wi Qtr. 3 cl. Prereq: 407 or equiv with written permission of instructor. Conducted in Russian.

553 Introduction to Russian Literature: Impressionism, Symbolism and Socialist Realism U G 3

Reading from representative authors such as Chekhov, Gorky, Blok, Bunin, and Sholokhov.

Sp Qtr. 3 cl. Prereq: 407 or equiv with written permission of instructor. Conducted in Russian.

571 Basic Russian for Graduate Students G 5

Basic elements of Russian grammar.

Au, Sp Qtrs. 5 cl. Prereq: Grad standing. Credit does not apply to the minimum hours required for the master's or doctoral degrees.

572 Russian for Research G 5

Wi Qtr. 5 cl. Prereq: Grade of C or above in 571 or equiv. Credit does not apply to the minimum hours required for the master's or doctoral degrees.

Repeatable twice. Satisfactory completion of this course (grade A or B) may be accepted by the student's dept as evidence of a dictionary reading knowledge in fulfillment of PhD language requirement.

609 Advanced Reading, Conversation, and Composition I U G 4

Reading of contemporary prose and verse, presentation of oral and written reports, drill in intonation patterns, translation from English into Russian.

Au Qtr. 3 cl, 2 hr arr. Prereq: 35 cr hrs in Russian.

610 Advanced Reading, Conversation, and Composition II U G 4

Wi Qtr. 3 cl, 2 hr arr. Prereq: 609 or permission of instructor.

611 Advanced Reading, Conversation, and Composition III U G 4

Sp Qtr. 3 cl, 2 hr arr. Prereq: 610 or permission of instructor.

613 Translation Techniques I U G 5

Translation of material from the social sciences; discussion of techniques, procedures, methodology, and the art of translation. Ehlers.

Au Qtr. 5 cl. Prereq: 30 cr hrs in Russian. Not open to students with credit for 513.

614 Translation Techniques II U G 5

Continuation of 613; work with progressively more difficult passages. Ehlers.

Wi Qtr. 5 cl. Prereq: 613 or equiv or permission of instructor. Not open to students with credit for 514.

615 Translation Techniques III U G 5

Translation of modern fiction; comparative and contrastive analysis of problems encountered in translating fiction and factual material. Ehlers.

Sp Qtr. 5 cl. Prereq: 614 or equiv or permission of instructor.

616 Translation Laboratory U G 2

Supervised translation of materials from current Soviet publications in the humanities and social sciences. Ehlers.

Au, Wi, Sp Qtrs. 2 cl. Prereq or concur: 613, 614, or 615; or equiv with written permission of instructor.

Repeatable to a maximum of 6 cr hrs. Required of all majors in translation certificate program and translation track of the BA major in Russian.

630 Applied Linguistics for the Russian Major U G 5

Introduction to the categories and techniques of applied linguistics, especially phonemic and morphemic analysis; all examples drawn from Russian and English.

Au Qtr. 3 cl. Prereq: 30 cr hrs in Russian.

635 Practical Russian Pronunciation U G 5

Lectures and practical exercises; use of phonetic symbols; corrective exercises; problems of teaching pronunciation.

Wi Qtr. 3 cl, 2 lab hrs. Prereq: 30 cr hrs in Russian.

640 Introduction to the Structure of Russian U G 5

Elements of Russian pronunciation and grammar with comparisons to English.

Su, Sp Qtrs. 3 cl. Prereq: 30 cr hrs in Russian.

644 Russian Folklore U G 5

From the beginning to present; proverbs, the oral epic, historical songs, folktales, the folk theatre; analysis of the folklore component in modern Russian literature.

Sp Qtr. 3 cl. Not open to students with credit for 834. Taught in Engl.

646†* Russian Poetry to 1890 U G 5

Readings from the major poets of the 18th and 19th centuries: Lomonsov, Zhukovsky, Pushkin, Lermontov, Tiutchev, Fet, Nekrasov, Polonsky, and others.

Au Qtr. 3 cl. Prereq: 551, 552, and 553, or permission of instructor. Not open to students with credit for 841. Taught in Russian.

647†* Russian Poetry from 1890 to Present U G 5

Major movements and poets: Blok, Bely, Briusov, Balmont, Mayakovsky, Gumilyov, Akhmatova, Esenin, Pasternak, Tvardovsky, Evlushenko, and others.

Wi Qtr. 3 cl. Prereq: 551, 552, and 553, or permission of instructor. Not open to students with credit for 842. Taught in Russian.

650†* Dostoevsky U G 5

Critical analysis of the major novels and shorter works; intellectual and literary development of Dostoevsky.

Au Qtr. 3 cl. Prereq: 10 cr hrs in Russian or other literature courses at the 200 level or above. Given in English but undergrad majors in Slavic will do prescribed portions of the reading in the original; grad students in Slavic must read in the original items starred on the departmental MA reading list.

651†* Tolstoy U G 5

Analysis of all major works including the novels, plays, stories, and important polemical works.

Wi Qtr. 3 cl. Prereq: 10 cr hrs in Russian or other literature courses at the 200 level or above. Given in English but undergrad majors in Slavic will do prescribed portions of the reading in the original; grad students in Slavic must read in the original items starred on the departmental MA reading list.

652†* Turgenev and Chekhov U G 5

Critical analysis of the major novels, plays, and short stories of both writers; stylistic similarities and differences.

Sp Qtr. 3 cl. Prereq: 10 cr hrs in Russian or other literature courses at the 200 level or above. Given in English but undergrad majors in Slavic will do prescribed portions of the reading in the original; grad students in Slavic must read in the original items starred on the departmental MA reading list.

653* Russian Drama U G 5

Emphasis on the period from 1850 to present day; Ostrovsky, Chekhov, Gorky, Andreyev, Blok, and Soviet writers Leonov and Kataev.

Au Qtr. 3 cl. Prereq: 10 cr hrs in Russian or other literature courses at the 200 level or above. Given in English but undergrad majors in Slavic will do prescribed portions of the reading in the original; grad students in Slavic must read in the original items starred on the departmental MA reading list.

654* Gogol U G 5

Critical analysis of all major works including novels, plays, short stories, and important polemical works.

Wi Qtr. 3 cl. Prereq: 10 cr hrs in Russian or other literature courses at the 200 level or above. Given in English but undergrad majors in Slavic will do prescribed portions of the reading in the original; grad students in Slavic must read in the original items starred on the departmental MA reading list.

655* Writers of Satire and Byt U G 5

Critical analysis of the major works of Aksakov, Goncharov, Saltykov-Shchedrin, and Leskov.

Sp Qtr. 3 cl. Prereq: 10 cr hrs in Russian or other literature courses at the 200 level or above. Given in English but undergrad majors in Slavic will do prescribed portions of the reading in the original; grad students in Slavic must read in the original items starred on the departmental MA reading list.

693 Individual Studies U G 2-10

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept chairman. Repeatable to a maximum of 15 cr hrs.

693.01 Literature to 1820**693.02 Literature 1820-1917****693.03 Literature since 1917****693.04 Morphology****693.05 Phonology****693.06 Dialectology****693.07 Old Russian****693.08 Unspecified****694 Group Studies U G 2-10**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept chairman. Repeatable to a maximum of 15 cr hrs.

698 Study Tour of the USSR U G 15

At The Ohio State University students will be given advanced work in conversation and reading in order to prepare for the tour; in the USSR only Russian will be spoken; some formal instruction will be given daily by the tour leaders.

Sp Qtr. Prereq: Minimum of 25 hrs in Russian or equiv and permission of dept chairman.

801 College Teaching of Russian I G 3

Methods and techniques for teaching Russian at the college level; selection and preparation of teaching and testing materials; the language laboratory and other aids.

Au Qtr. 3 cl, 2 lab hrs. Prereq: 611 or equiv, or permission of instructor.

802* College Teaching of Russian II G 2

Continuation of 801; development of advanced instructional and testing materials; selection of readings and cultural materials; planning undergraduate Russian language programs; research on language teaching.

Wi Qtr. 2 cl, 1 lab hr. Prereq: 801 or permission of instructor.

813* Readings in Old Russian G 5

Reading and analysis of Old Russian texts.

Sp Qtr. 3 cl. Prereq: Slavic 810 or permission of instructor.

820 History of the Russian Language G 3

A survey of phonetic, morphological, and syntactical changes from the period of Common Slavic to the present; the formation of the Russian literary language.

Wi Qtr. 3 cl.

823* Development of the Russian Literary Language G 5

The formation of Russian as a literary language; the role of Church Slavonic elements in its formation and Western influences on Russian.

Au Qtr. 3 cl. Prereq: 820 or permission of instructor.

826 Topics in the Structure of Russian G 5

Analysis and description of the structure of contemporary standard Russian.

Wi Qtr. 3 cl. Prereq: 640 or equiv with written permission of instructor. Repeatable to a maximum of 15 cr hrs.

827†* Topics in the History of Russian G 5

Development of Russian from Common Slavic to contemporary standard Russian with consideration of its place within East Slavic.

Au Qtr. 3 cl. Prereq: 820 or equiv with written permission of instructor. Repeatable to a maximum of 15 cr hrs.

830* Russian Literature to 1650 G 5

Emphasis on literature of the Kievan period. Silbajoris.

Wi Qtr. 3 cl. Prereq: 2nd yr grad standing or permission of instructor.

831* Russian Literature, 1650-1800 G 5

The baroque period, classicism, and sentimentalism; emphasis on the classical period of the 18th century. Silbajoris.

Sp Qtr. 3 cl. Prereq: 2nd yr grad standing or permission of instructor.

832†* History of Russian Literary Criticism I G 5

From the 17th century to 1890; reading and discussion of Prokopovich, Trediakovsky, Sumarokov, Karamzin, Belinsky, Chernyshevsky, Pisarev, Dobroliubov, Mikhailovsky, Grigor'ev, and Leont'ev.

Au Qtr. 3 cl. Prereq: 2nd yr grad standing or permission of instructor.

833†* History of Russian Literary Criticism II G 5

From 1890 to the present; decadents, modernists, and symbolists to 1920; Leo Tolstoy; formalism and the sociological method in the 1920's; socialist realism.

Sp Qtr. 3 cl. Prereq: 2nd yr grad standing or permission of instructor.

840* Pushkin and His Time G 5

Analysis of Eugene Onegin as poetry and an encyclopedia of the times; social, political, and cultural trends in the 1820's and 1830's; romantic poets. Silbajoris.

Au Qtr. 3 cl. Prereq: 2nd yr grad standing or permission of instructor.

843†* Russian Poetics and Versification G 5

Development of Russian versification from the byliny to the present; folk meter, syllabic verse, syllabo-tonic versification of the 19th and 20th centuries, tonic verse.

Sp Qtr. 3 cl. Prereq: 646, 647 and 2nd yr grad standing, or written permission of instructor.

850 Seminar in Russian Literature to 1820 G 3-5

Au Qtr. 2 cl. Repeatable to a maximum of 15 cr hrs.

851 Seminar in Russian Literature, 1820-1917 G 3-5

Wi Qtr. 2 cl. Repeatable to a maximum of 15 cr hrs.

852 Seminar in Russian Literature since 1917 G 3-5

Sp Qtr. 2 cl. Repeatable to a maximum of 15 cr hrs.

894 Group Studies G 2-10

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept chairman. Repeatable to a maximum of 15 cr hrs.

993 Individual Studies G 2-10

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept chairman. Repeatable to a maximum of 30 cr hrs in any combination of decimal subdivisions.

993.01 Literature to 1820**993.02 Literature 1820-1917****993.03 Literature since 1917****993.04 Morphology****993.05 Phonology****993.06 Dialectology****993.07 Old Russian****993.08 Unspecified**

Serbo-Croatian

Office: 232 Dieter Cunz Hall of Languages, 1841 Millikin Road, 422-6733

101* Elementary Serbo-Croatian U 5

Au Qtr. 5 cl. Not open to students with credit for 601.

102* Elementary Serbo-Croatian U 5

Wi Qtr. 5 cl. Prereq: 101 or 601. Not open to students with credit for 602.

103* Intermediate Serbo-Croatian U 5

Sp Qtr. 5 cl. Prereq: 102 or 602. Not open to students with credit for 603.

104†* Intermediate Serbo-Croatian U 5

Reading of simple Serbo-Croatian texts from the 19th century.

Au, Qtr. 5 cl. Prereq: 103, 112 or equiv with written permission of instructor. Not open to students with credit for 604.

112 Intensive Serbo-Croatian U 5, 10 or 15

Elementary and intermediate Serbo-Croatian for students desiring a comprehensive knowledge of Serbo-Croatian in the shortest possible time.

Su Qtr. 15 cl. Prereq: Written permission of chairman. Students with credit for 101 or the equiv may not register for more than 10 cr hrs. Students with credit for 101 and 102 or the equiv may not register for more than 5 cr hrs. Students with credit for 103 or the equiv may not register for credit. Full time of student and full fees required.

220†* Serbo-Croatian Literature in English Translation U 5

From the medieval period to the beginning of the 19th century; religious literature, heroic songs, written epic, the Renaissance, and classicism.

Au Qtr. 4 cl, 1 hr arr. Not open to students with credit for 620.

221†* Serbo-Croatian Literature in English Translation U 5

Literature of the 19th and 20th centuries; emphasis on Vuk Karadzic, Njegos, and Andric.

Wi Qtr. 4 cl, 1 hr arr. Not open to students with credit for 621.

605†* Serbo-Croatian Conversation and Composition U G 5

Reading texts of moderate difficulty, conversation, and simple compositions.

Wi Qtr. 5 cl. Prereq: 104 or permission of instructor.

606†* Serbo-Croatian Conversation and Composition U G 5

Reading from modern Serbo-Croatian literature, practice in writing and speaking.

Sp Qtr. 5 cl. Prereq: 605 or permission of instructor.

622†* Contemporary Serbo-Croatian Literature U G 5

Prose and poetry since 1945; emphasis on Andric, Cosic, Lalic, Davico, Erih Kos, Krleza, and Raickovic. Matejic.

Sp Qtr. 3 cl. Prereq: 605. Not open to students with credit for 722.

693 Individual Studies U G 2-10

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of chairman. Repeatable to a maximum of 20 cr hrs.

- 693.01 Literature to 1850
- 693.02 Literature, 1850-1918
- 693.03 Literature since 1918
- 693.04 Morphology
- 693.05 Phonology
- 693.06 Dialectology
- 693.07 Old Serbian or Old Croatian
- 693.08 Unspecified

694 Group Studies U G 2-10

Au, Wi, Sp Qtrs. Prereq: Permission of chairman. Repeatable to a maximum of 15 cr hrs.

821* Structure of Serbo-Croatian G 5

Analysis and description of the phonological and morphological systems of contemporary literary Serbo-Croatian. Naylor.

Sp Qtr. 3 cl. Prereq: 606 or permission of instructor.

830* Literature of Dubrovnik 1400-1800 G 5

Humanism, Renaissance and Baroque; major works of poetry and drama; emphasis on Marulic, Drzic, and Gundulic. Matejic.

Au Qtr. 3 cl. Prereq: 2nd yr grad standing or written permission of instructor.

831* Romanticism G 5

Critical analysis of the major works of Serbo-Croatian Romantic Literature; emphasis on the oral epic, Njegos, and Mazuranic. Matejic.

Wi Qtr. 3 cl. Prereq: 2nd yr grad standing or written permission of instructor.

894 Group Studies G 2-10

Au Qtr. Prereq: Written permission of chairman. Repeatable to a maximum of 15 cr hrs.

993 Individual Studies G 2-10

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of chairman. Repeatable to a maximum of 40 cr hrs in any combination of decimal subdivisions.

- 993.01 Literature to 1850
- 993.02 Literature from 1850-1918
- 993.03 Literature since 1918
- 993.04 Morphology
- 993.05 Phonology
- 993.06 Dialectology
- 993.07 Old Serbian or Old Croatian
- 993.08 Unspecified

219 Slavic Literature in English Translation from the Beginning to the Present U 5

Emphasis on masterpieces of non-Russian Slavic literatures; epic tradition, Kochanowski, Comenius, Obradovic, Mickiewicz, Shevchenko, Macha, Sienkiewicz, Reymont, Franko, Ukrainka, Vazov, Capek, Hasek, and Andric.

Sp Qtr. 4 cl, 1 hr arr. Not open to students with credit for 519.

294 Group Studies U 1-5

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs in any combination of decimal subdivisions:

- 294.01 Literature, East Slavic
- 294.02 Literature, South Slavic
- 294.03 Literature, West Slavic
- 294.04 Literature, Unspecified
- 294.05 Language, East Slavic
- 294.06 Language, South Slavic
- 294.07 Language, West Slavic
- 294.08 Slavic Culture
- 294.09 Unspecified

693 Individual Studies U G 2-10

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept chairman. Repeatable to a maximum of 20 cr hrs.

- 693.01 Literature, East Slavic
- 693.02 Literature, South Slavic
- 693.03 Literature, West Slavic
- 693.04 Literature, Unspecified
- 693.05 Linguistics, East Slavic
- 693.06 Linguistics, South Slavic
- 693.07 Linguistics, West Slavic
- 693.08 Linguistics, Unspecified
- 693.09 Church Slavonic
- 693.10 Linguistics, Balto-Slavic
- 693.11 Unspecified

694 Group Studies U G 1-10

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of chairman. Each decimal subdivision repeatable to a maximum of 10 cr hrs.

- 694.01 Literature, East Slavic
- 694.02 Literature, South Slavic
- 694.03 Literature, West Slavic
- 694.04 Literature, Unspecified
- 694.05 Linguistics, East Slavic
- 694.06 Linguistics, South Slavic
- 694.07 Linguistics, West Slavic
- 694.08 Linguistics, Unspecified
- 694.09 Church Slavonic
- 694.10 Linguistics, Balto-Slavic
- 694.11 Unspecified

699 Senior Tutorial and Essay U 5

Individual study which leads to the writing of an essay that will integrate the experience of earlier courses in Slavic.

Au, Wi, Sp Qtrs. Open only to sr majors in Slavic languages.

H783 Honors Course U 3-5

Au, Wi, Sp Qtrs. Prereq: 4th yr standing; a grade of A in at least half of the Slavic courses taken and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs.

Slavic Languages and Literatures

Office: 232 Dieter Cunz Hall of Languages, 1841 Millikin Road, 422-6733

130 Slavic Languages and Cultures U 5

History of the distribution of Slavic peoples; cultural impact of Slavic nations upon each other, their interaction with non-Slavic neighbors; language policies of Slavic nations.

Au Qtr. 4 cl. Taught in English. Not open to students with credit for 230.

800 Bibliography and Method G 3

Required of all candidates for grad degrees; to acquaint grad students with the tools, problems, and methods of linguistic and literary research.

Au Qtr. 2 cl. Not open to students with credit for 880.

810 Old Church Slavonic G 5

Study of the earliest Slavic language; reading and linguistic interpretation of original documents.

Au Qtr. 5 cl. Not open to students with credit for Russian 810.

812†* Readings in Church Slavonic Texts G 5

Reading and analysis of Church Slavonic texts of the later period.

Wi Qtr. 3 cl. Prereq: 810 or permission of instructor. Not open to students with credit for Russian 812.

860 An Introduction to the Slavic Languages G 3

A general survey of all the Slavic languages and their common features. Robinson.

Wi Qtr. 3 cl.

861* History of the South Slavic Languages G 5

Bulgarian, Macedonian, Serbo-Croatian, and Slovenian, with emphasis on Serbo-Croatian and its relation to the other South Slavic Languages. Naylor.

Au Qtr. 3 cl. Prereq: Good command of Russian and acquaintance with a second Slavic language or permission of instructor.

862†* History of the West Slavic Languages G 5

Polish, Czech, Slovak, Polabian, Kashubian, and Lusatian, with special emphasis on Polish and its relation to the other West Slavic languages. Robinson.

Sp Qtr. 3 cl. Prereq: Good command of Russian, and acquaintance with a second Slavic language or permission of instructor.

864* Comparative Slavic Grammar G 5

Development of Indo-European phonology and morphology into Common Slavic and the development in contemporary Slavic languages.

Sp Qtr. 3 cl. Prereq: 860 or permission of instructor.

870 Seminar in Slavic Philology G 3-5

Historical and comparative studies in the Slavic languages and related language families, including Baltic and Finno-Ugric.

Au Qtr. 2 cl. Repeatable to a maximum of 20 cr hrs.

871 Seminar in Slavic Linguistics G 3-5

Descriptive and transformational studies in Russian and other Slavic languages.

Sp Qtr. 2 cl. Repeatable to a maximum of 20 cr hrs.

875 Seminar in Slavic Literature G 3-5

Selected topics from medieval and modern literature.

Au Qtr. 2 cl. Repeatable to a maximum of 15 cr hrs.

Medieval and Renaissance Culture

See Medvl and Renais S 888.

Medieval and Renaissance Literature

See Medvl and Renais S 889.

894 Group Studies G 2-10

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept chairman. Repeatable to a maximum of 10 cr hrs.

894.01 Literature, East Slavic**894.02 Literature, South Slavic****894.03 Literature, West Slavic****894.04 Literature, Unspecified****894.05 Linguistics, East Slavic****894.06 Linguistics, South Slavic****894.07 Linguistics, West Slavic****894.08 Linguistics, Unspecified****894.09 Church Slavonic****894.10 Linguistics, Balto-Slavic****894.11 Unspecified****993 Individual Studies G 2-10**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of chairman. Repeatable to a maximum of 40 cr hrs in any combination of decimal subdivisions.

993.01 Literature, East Slavic**993.02 Literature, South Slavic****993.03 Literature, West Slavic****993.04 Literature, Unspecified****993.05 Linguistics, East Slavic****993.06 Linguistics, South Slavic****993.07 Linguistics, West Slavic****993.08 Linguistics, Unspecified****993.08 Church Slavonic****993.10 Linguistics, Balto-Slavic****993.11 Unspecified****999 Research in Slavic G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

Social and Behavioral Sciences, College of

Office: 166 Denney Hall, 164 West 17th Avenue, 422-8448

294 Group Studies U 1-5

Interdisciplinary studies in the social and behavioral areas.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

694 Group Studies U G 1-5

Interdisciplinary studies in the social and behavioral areas.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

Social Work

Office: 300 Stillman Hall, 1947 College Road, 422-6288

131† Introduction to Social Functioning U 3

Beginning knowledge of personality theory and its utilization within a social functioning context; selected theories explicated and applied to the human socialization process.

Su, Au, Wi, Sp Qtrs. 3 cl. Open only to students enrolled in Social Work New Careers Program.

141† Introduction to Social Work U 3

An overview of social work; its development as a profession, its basic structure and functions, the changing nature of social work practice, and different modes of professional intervention.

Su, Au, Wi, Sp Qtrs. 3 cl. Open only to students enrolled in Social Work New Careers Program.

142† Interviewing for Social Work Practice U 3

Examination of basic interviewing concepts; development, through observation and role playing, of interviewing skills needed for practice in various social welfare settings.

Su, Au, Wi, Sp Qtrs. 3 cl. Open only to students enrolled in Social Work New Careers Program.

220 Introduction to Social Welfare U 3

Exploration of the universality of human needs and the American experience in meeting those needs through the institutional arrangements of church, family, government, and market place.

Au, Wi, Sp Qtrs. 3 cl. Designed primarily for freshmen and sophomores.

240 Introduction to Social Work Profession and Practice U 3

Social work within society and the community of professions; exploration of purposes, problems and opportunities of practice; observation of and exposure to practice in the field.

Au, Wi, Sp Qtrs. 3 cl. Designed primarily for freshmen and sophomores.

323 Problems, Policies, and Programs in Social Welfare I U 4

An introduction to the values, value conflicts, and major goals in the American social welfare system.

Au, Wi Qtrs. 2 2-hr cl. Prereq: Social welfare major; non-majors with permission only.

325 Problems, Policies, and Programs in Social Welfare II U 4

Examination of the interrelationships among various social problems, social welfare programs, policy issues, and the role of social work in terms of the American social welfare system.

Au, Wi Qtrs. 2 2-hr cl. Prereq: 323; social welfare major; non-majors with permission only.

380 Introduction to Research Methods in Social Work U 5

Science and society; research design; measuring variables; data collection, processing and analysis; participation in a research project is required.

Au, Wi, Sp Qtrs. 3 cl, 1 2-hr lab. Prereq: Stat 125 or equiv.

414† Introduction to Field Practice U 2

Small group seminar designed to prepare students for a subsequent one-quarter practicum in a social

welfare organization; focus on field trips, class discussion.

Wi, Sp Qtrs. 2-hr seminar. Prereq: Social welfare major and permission of the BS in Social Welfare Program Coordinator.

415 Field Practice U 1-15

Placement in a social welfare organization used by the school as a teaching center; student expected to assume service provision role in a progressively responsible manner.

Su, Sp Qtrs. Social agency assignments. Prereq: Social welfare major, 414, and permission of the BS in Social Welfare Program Coordinator.

431 Determinants of Social Functioning I U 4

Introduction to individual, group, organizational and community determinants of social functioning with attention to stress and sub-cultural processes and conditions.

Au Qtr. 2 2-hr cl. Prereq: Social welfare major; non-majors with permission only.

432 Determinants of Social Functioning II U 3

Introduction to the basic determinants of individual and family social functioning, using a life cycle approach from marriage through children's latency.

Wi Qtr. 2 1½-hr cl. Prereq: 431, social welfare major; non-majors with permission only.

433 Determinants of Social Functioning III U 3

Introduction to the basic determinants of individual and family functioning, using a life cycle approach, from children's latency through aging years of parents.

Au, Wi Qtrs. 2 1½-hr cl. Prereq: 432, social welfare major; non-majors with permission only.

443† Social Work Practice I U 3

The structure of social work, its dimensions, parameters, and functions.

Au, Wi Qtrs. 2 1½-hr cl. Prereq: Social welfare major; non-majors with permission only.

445† Social Work Practice II U 3

Social worker roles, activities, and responsibilities.

Wi, Sp Qtrs. 2 1½-hr cl. Prereq: 443, social welfare major; non-majors with permission only.

447 Social Work Practice III U 3

Development of a conceptual framework for social work practice.

Au, Wi Qtrs. 2 1½-hr cl. Prereq: 445, social welfare major; non-majors with permission only.

494 Group Studies U 2-5

Design to give groups of students an opportunity to pursue special studies not otherwise offered in social work.

Su, Au, Wi, Sp Qtrs. Arr. Repeatable to a maximum of 10 cr hrs.

503 Juvenile Delinquency: Its Treatment and Prevention U G 5

Juvenile delinquency as a social problem; methods of treatment and prevention, including juvenile courts, clinics, probation, parole, correctional institutions, child placement, and recreational programs.

Au, Wi, Sp Qtrs. 2 2½-hr cl. Prereq: 3rd or 4th year standing.

505 Social Implications in Rehabilitation U G 3

The significance of disability and employment in their social, medical, and industrial application; rehabilitation as a process; current concepts.

Au, Sp Qtrs. 3 cl. Prereq: 3rd or 4th yr standing. Not for grad credit to students in soc work.

507 Social Work and Health Services U G 3

The nature, organization, and function of programs, facilities in the health practice field; the social and economic implication of chronic disease.

Wi Qtr. 3 cl. Prereq: 4th yr standing or permission of instructor.

509 Legal Aspects of Social Work U G 3

Law as a means of social control; study of case, statute, and constitutional law most frequently involved in social work practice; legal aid.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 3rd or 4th yr. standing or permission of instructor. Not for grad credit to students in soc work.

519† Introduction to Social Welfare U G 5

Exploration of conceptualizations of "social welfare" relevant to human service professions; examination of research and issues regarding income distribution, health care, criminal justice, social service.

Au Qtr. 2 2-hr cl. An upper division course offering primarily for non-soc work majors.

593 Individual Studies U 1-5

Individual study projects on problems and services in selected areas of social welfare; report required.

Su, Au, Wi, Sp Qtrs. Prereq: 12 cr hrs in soc work courses, approval of instructor, and review by sequence chairman. Repeatable to a maximum of 10 cr hrs.

615 Field Practice I P G 3-8

Planned visits to social agencies group analysis of observation, followed by assignment to specific agency for beginning responsibilities with recipients of agency service.

Su, Au, Wi, Sp Qtrs. Prereq: Soc work 1st yr grad standing. Arranged by the student's faculty adviser. Repeatable to a maximum of 18 cr. hrs.

620 Social Welfare Policies and Programs I P G 4

Historical and comparative analysis of social welfare systems; their relationship to change in the basic social institutions of family, church, government, and economic institutions.

Au Qtr. 2 2-hr cl.

621 Social Welfare Policies and Programs II P G 4

The development and application of a conceptual model for social welfare policy and program analysis.

Wi Qtr. 2 2-hr cl. Prereq: 620 or equiv.

631 Dynamics of Social Functioning I P G 4

Dynamics of social functioning examined at the individual, group, and community levels of analysis, with attention to stress, subcultural, and socio-economic processes and conditions.

Au Qtr. 2 2-hr cl. Prereq: Grad standing and permission of instructor.

632 Dynamics of Social Functioning II P G 3

Dynamics of individual and family social functioning as typically experienced and as occurs in response to stress, from conception through latency.

Wi Qtr. 2 1½-hr cl. Prereq: 631 or permission of instructor.

633 Dynamics of Social Functioning III P G 3

Dynamics of individual and family social functioning as typically experienced and as occurs in response to stress, from adolescence through aging years of parents.

Sp Qtr. 2 1½-hr cl. Prereq: 632 or permission of instructor.

641 Social Work Practice Theory I P G 3

Fundamentals of social work practice; practice components, interactional processes, units of attention, and framework of practice.

Au Qtr. 2 1½-hr cl. Prereq: Soc work grad standing; concur 615.

642 Social Work Practice Theory II P G 3

Strategies for intervention: differential modes of practice to affect functioning and development of individuals and groups.

Wi Qtr. 2 1½-hr cl. Prereq: Soc work grad standing and 641; concur 615.

643 Social Work Practice Theory III P G 3

Analysis of practice concepts; formulation and operationalization of conceptual hypotheses.

Sp Qtr. 2 2½-hr cl. Prereq: Soc work grad standing and 642; concur 615.

680 Research Methods in Social Work P G 3-6

Formulating researchable questions and hypothetical answers for testing, measurement, research design, data collection and processing, statistical analysis, and reporting results.

Wi, Sp Qtrs. 1 2-hr cl, 1 lab. Prereq: Social work grad standing, 380 or equiv.

698† Student Study Tour U G 1-15

Su, Au, Wi, Sp Qtrs.

700 Interprofessional Education U G 3

Focus on ethical issues, changing professional/consumer rights and interprofessional cooperation.

3 cl. Repeatable to a maximum of 6 cr hrs.

700.01 Care of Patient/Client

Treatment of the whole person through the analysis of the interrelated problems of actual patients/clients.

Wi Qtr.

700.02 Changing Societal Values

Identification and clarification of values considerations as they relate to professional problems in dealing with consumer/clients/patients.

Au Qtr.

700.03 Ethical Issues

Ethical issues of concern to the professions and arising out of the advanced technology: euthanasia, mind control, malpractice, social responsibility of the professions.

Sp Qtr. Limited to students enrolled in Law, Medicine, Nursing, Social Work, theology (Columbus seminars).

703 Seminars in Social Welfare Policy and Program Analysis P G 3

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: 621 or equiv and written permission of instructor. Repeatable to a maximum of 9 cr hrs.

- a—Community Mental Health
- c—Health
- d—Law and Social Work
- e—International Social Welfare
- f—Aging
- g—School
- k—Child Abuse

715 Field Practice II P G 6-15

Application of social work theory in selected social agency settings; joint direction and evaluation by agency staff and faculty.

Su, Au, Wi, Sp Qtrs. Prereq: Soc work 2nd yr grad standing and 615 or equiv. Repeatable to maximum of 26 cr hrs.

730 Seminars in Social Functioning P G 3-5

Presentation and critical examination of personality, interactional, small group, organizational and community concepts and approaches used in analyzing social dysfunctioning.

Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: Soc work grad standing, 633 or equiv. Repeatable to a maximum of 9 cr hrs.

- a—Institutional and Organizational Behavior
- b—Psychopathology and Deviance

732† Seminars in Application of Personality Theory to Social Work Practice P G 3

Assessment of the utility and applicability of personality theories to social work practice.

Sp Qtr. 1 3-hr cl. Prereq: Soc work grad standing and 633 or equiv.

741 Seminars in Clinical Aspects of Social Work Practice P G 3-9

Concepts and strategies for enhancing social functioning and human realization of individuals, families, and groups; subjects ranging from clinical practice formulations through treatment milieu.

Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: Soc work grad standing and 643. Repeatable to a maximum of 9 cr hrs.

742 Seminars in Administrative Aspects of Social Work Practice P G 3-9

Concepts and strategies for transforming organizational resources into effective delivery of services; topics include administrative, supervisory, consultative, and inter-organizational practitioner roles.

Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: Soc work grad standing and 643. Repeatable to a maximum of 9 cr hrs.

743 Seminars in Social Planning Aspects of Social Work Practice P G 3-9

Concepts and strategies involved in the design, implementation, monitoring and evaluation of social service delivery options.

Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: Soc work grad standing and 643. Repeatable to a maximum of 9 cr hrs.

746 Seminar in Social Work Practice Issues P G 3

Identification, critical examination, and development of a point of view concerning selected issues arising in or impinging upon social work.

Sp Qtr. 1 cl. Prereq: Soc work grad standing and 643.

785 Seminar in Social Work Research Critique P G 1-6

Evaluation of selected research reports with reference to their relevance to social work and soundness of methodology; written and oral presentation required.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Soc work grad standing, 680 or equiv. Repeatable to a maximum of 6 cr hrs.

786 Group Research Project P G 1-6

Student and faculty participation in the development of a research project at the School or a teaching center; jointly authored research report required.

Au, Wi, Sp Qtrs. Prereq: Soc work grad standing, 680 or equiv. Repeatable to a maximum of 6 cr hrs.

787 Seminar on the Application of Experimental Designs to Social Work Research P G 3

Evaluating the plausibility of findings from research using experimental designs as compared with the plausibility of findings from other designs when an experimental design was not feasible.

Sp Qtr. 1 3-hr cl. Prereq: 680 or equiv.

- a—Micro-evaluation
- b—Macro-evaluation

788 Seminar on Mental Retardation: Interdisciplinary Aspects U P G 2-5

An interdisciplinary approach to mental retardation.

Su, Au, Wi, Sp Qtrs. Seminars—50%; Family Contact—50%. Prereq: Permission of instructor.

793 Individual Studies P G 1-5

Directed readings and tutorials related to specific problems.

Su, Au, Wi, Sp Qtrs. Prereq: Soc work grad standing, permission of instructor, and review by sequence chairman. Repeatable to a maximum of 15 cr hrs.

794 Group Studies U P G 1-4

Group seminars in areas of curriculum.

Su, Au, Wi, Sp Qtrs. Prereq: Soc work grad standing, permission of instructor, and review by sequence chairman. Repeatable to a maximum of 15 cr hrs.

797 Interdisciplinary Seminars in Family-Social Medicine P G 2-5

Students assigned in interdisciplinary pairs or groups to families with complex medical/social problems with resource faculty.

Prereq: Permission of instructor.

802 Seminar in Social Work Education G 3

Development of social work education in North America; problems and issues in curriculum building, teaching methods, and class and field instruction.

Sp Qtr. 3 cl. Prereq: MSW or permission of instructor.

820 Seminar in Social Welfare Policies and Programs I G 3-5

Historical view of policy formation as influenced by political, economic, and social conditions; analysis and evaluation of processes involved in major developments.

Au Qtr. 3 cl. Prereq: MSW or permission of instructor.

821 Seminar in Social Welfare Policies and Programs II G 3-5

Analysis of demographic, political, economic, and other influences upon social policy planning; evaluation of policy planning effectiveness.

Wi Qtr. 2 cl. Prereq: 820 or permission of instructor.

822 Seminar in Social Welfare Policies and Programs III G 3-5

Critical analysis of selected current issues in social policy such as population control, income maintenance, federal, state, and local role in comprehensive social service programs.
Sp Qtr. 3 cl. Prereq: 821 or permission of instructor.

830 Seminar in Social Functioning I G 3-5

Critical examination of selected biological, psychological, and social determinants of social functioning and dyadic, small group, organizational, and community levels of analysis.
Au Qtr. 3 cl. Prereq: MSW or permission of instructor.

831 Seminar in Social Functioning II G 3-5

Problems in knowledge selection and conceptualization as related to social work practice and the biological, behavioral, and social sciences.
Wi Qtr. 3 cl. Prereq: 830 or permission of instructor.

840 Seminar in Social Work Practice I G 3-5

Examination of the nature of social work practice; critical analysis of the underlying assumptions and theoretical base of social work methods.
Wi Qtr. 3 cl. Prereq: MSW or permission of instructor.

841 Seminar in Social Work Practice II G 3-5

Comparative analysis of social work methods; selected problems and issues.
Sp Qtr. 3 cl. Prereq: 840 or permission of instructor.

880 Seminar in Social Work Research I G 3-5

Advanced research design and analysis appropriate for testing hypotheses relevant to social welfare knowledge.
Au Qtr. Prereq: Soc work grad standing, 680, or equiv, and permission of instructor.

881 Seminar in Social Work Research II G 3-5

Evaluation of selected research reports with reference to their relevance to social welfare and soundness of methodology.
Wi Qtr. Prereq: Soc work grad standing, 880 or equiv, and permission of instructor.

882 Seminar in Social Work Research III G 3-5

Planning research designs and feasible administrative procedures for testing hypotheses relevant to social welfare knowledge.
Sp Qtr. Prereq: Soc work grad standing, 881, or equiv, and permission of instructor.

894 Group Studies G 2-4

Su, Au, Wi, Sp. Qtrs. Prereq: MSW or equiv with written permission of instructor. Repeatable to a maximum of 20 cr hrs, not more than 10 of which shall be in any one of the following areas.
a—Social Work Practice
b—Social Welfare Policy
c—Dynamics of Social Functioning
d—Other

899 Interdepartmental Seminar G 1-5

See Interdepartmental Seminars.
Su, Au, Wi, Sp Qtrs.

993 Individual Studies G 1-3

Directed readings and tutorials related to specific problems and issues in following areas:

- a—Social Work Practice
- b—Social Welfare Policy
- c—Dynamics of Social Functioning
- d—Social Work Research
- e—Social Work Education
- f—Other

Su, Au, Wi, Sp Qtrs. Prereq: MSW or permission of instructor. Repeatable to a maximum of 15 cr hrs.

998 Research in Social Work: Thesis G Arr

Research for thesis purposes only.
Su, Au, Wi, Sp Qtrs.

999 Research in Social Work: Dissertation G Arr

Research for dissertation purposes only.
Su, Au, Wi, Sp Qtrs.

Sociology

Office: 112 Hagerty Hall, 1775 College Road, 422-6681

101 Introductory Sociology U 5

Fundamental concepts of sociology and an introduction to the analysis of social problems.
Su, Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 201 or equiv or Rurl Soc 105 or equiv.

201 Fundamentals of Sociology U 5

Nature of society and the factors affecting its development, culture, personality, groups and institutions; selected social problems.
Su, Au, Wi, Sp Qtrs. 5 cl. H201 (honors) may be available to students enrolled in an honors program or by permission of instructor. Not open to students with credit for 101 or equiv.

202 Social Problems U 5

Analysis of contemporary social problems.
Clatworthy, Dailey, Scott, and Seidler.
Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 5 cr hrs in sociol. Not open to students with 15 cr hrs or more in sociol; except with written permission of instructor.

206 Social Implications of Low Income U 3

A study of low-income peoples, especially concerning the effect of low-income on them, and their consequent social participation. Clatworthy.
Sp Qtr. 3 cl. Prereq: 5 cr hrs in sociol or equiv with permission of instructor.

208 Contemporary Social Movements U 3

An analysis of social movements and the issues and ideologies which underlie them. Aveni and Seidler.
Wi Qtr. 3 cl. Prereq: 101 or 201 or equiv with written permission of instructor.

210 Sociological Aspects of Deviance U 5

Study of the definition, identification, treatment and control of types of legal, moral and status deviance, such as crime, mental illness, alcoholism and other individual pathologies. Lundman, Dailey and Scott.
Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 5 cr hrs in sociol. Not open to students with 15 cr hrs or more in sociology except with written permission of instructor.

213 Population Problems U 5

A general non-technical introduction to population studies, emphasizing how population growth and structure have caused or aggravated social problems in various countries. Li and Petersen.

Au, Wi Qtrs. 4 cl, 1 hr arr.

220 Sociology of Education U 4

Current social trends as they affect education; backgrounds of school children, social status of teachers, role of power and bureaucracy. Corwin and Himmelfarb.

Su, Au, Sp Qtrs. 4 cl. Prereq: 5 cr hrs in sociol.

250 Types of Sociological Inquiry U 5

Introduction to sociological research techniques, methodological approaches, and relevant quantitative procedures. Aveni, Himmelfarb, Li, Quarantelli, Scott and Taylor.

Au, Wi, Sp Qtrs. 3 cl, 2 2-hr labs. Prereq: 5 cr hrs in sociol or equiv with permission of instructor.

280 American Minority Relations U 3

Survey of the attitudes and relationships arising from the contacts of various racial and ethnic groups in the United States. VanderZanden.

Au, Sp Qtrs. 3 cl. Prereq: 5 cr hrs in sociol. Not open to students with credit for 480 or equiv.

294 Group Studies U 3-5

Au Qtr. Prereq: 101. Repeatable to a maximum of 10 cr hrs. Topics vary each quarter offered.

330 Varieties of Modern Marriage U 3

Examination of sociological and social-psychological research describing and interpreting emerging pluralistic patterns of man-woman and parent-child relationships. Clatworthy.

Au, Wi, Sp Qtrs. 3 cl.

407 Social Change U 5

Recent social changes, especially in Western civilization and the United States; types of societies in historical perspective; requirements of a good society. Aveni.

Au, Wi Qtrs. 5 cl. Prereq: 5 cr hrs in sociol or equiv with permission of instructor. Not open to students with credit for 207.

410 Criminology U 5

The nature, variation, and causes of crime and delinquency; studies of criminal liability, criminal careers, and organized racketeering. Dailey, Dinitz, Lundman, and Scott.

Su (1st term), Au, Wi, Sp Qtrs. 5 cl. Prereq: 5 cr hrs in sociol.

430 Sociology of the Family U 4

Analysis of relationships between the family and the larger society including mate selection, status of women, and patterns of husband-wife and parent-child relationships. Clarke.

Au, Sp Qtrs. 4 cl. Prereq: 5 cr hrs in sociol.

434 The Child and Society U 4

A study of the ways in which society socializes children; current breakdown in the socializing processes and implications for the school and other educational agencies. G. Hinkle.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 5 cr hrs in sociol.

435 Sociology of Women U 5

Analysis of sex-roles and social structure with emphasis on modern social movements concerned with redefining sex-role relationships. Macke, Taylor, and Walum.

Sp Qtr. 5 cl. Prereq: 5 cr hrs in sociol.

450 Illness and Social Behavior U 5

Study of cultural, social, psychological, and sociological factors in disease processes, distribution of disease, definition of illness, organization of health professions and facilities.

Wi Qtr. 5 cl. Prereq: 5 cr hrs in sociol.

451 Sociology of Law U 5

The relationship between law and social order; evolutionary aspects of law, comparative legal systems, procedural and substantive problems, emerging moral and normative issues. Scott and Dailey.

Wi Qtr. 5 cl. Prereq: 5 cr hrs in sociol.

462 Sociology of Organizations U 4

Functioning of large complex social groupings; goals, structures, coordination, dispersion, survival, change as seen in various organizations: e.g.—governmental, educational, religious, business, and occupational organizations. Corwin and Helfrich.

Au Qtr. 3 cl. Prereq: 5 cr hrs in sociol.

463 Social Stratification U 4

Class distinction as a phase of social differentiation; origin and characteristics of social class; significance for modern society of class consciousness, class struggle, and social mobility. Aveni, Helfrich, Dynes, and Tien.

Su (1st term), Au, Wi, Sp Qtrs. 4 cl. Prereq: 5 cr hrs in sociol.

464 Human Relationships in Industry U 4

Social processes and problems associated with contemporary industry including growth of formal and informal organizational structure, communication processes, attitude problems, and morale. Helfrich.

Wi, Sp Qtrs. 3 cl. Prereq: 5 cr hrs in sociol.

465 Work and Leisure in Mass Society U 4

An analysis of current relationships between work and leisure, emphasizing social implications of increased leisure time and changing conceptions of work and leisure. Clarke.

Au Qtr. 4 cl. Prereq: 5 cr hrs in sociol.

467 Religious Institutions in Modern Society U 4

The social role of religious institutions and beliefs, with particular reference to the United States; the relation between religion and other aspects of society.

Wi, Sp Qtrs. 3 cl. Prereq: 5 cr hrs in sociol. Not open to students with credit for 667.

470 Social Factors in Personality U 5

Analysis of relationships between social structure and personality; language; its consequences for social behavior; socialization: learning of motives and social roles; personality: development, organization, and disorganization. Alonzo, Curry, Franklin, and G. Hinkle.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 5 cr hrs in sociol.

480 Comparative Race Relations U 3

Analysis of variations in patterns of race relations in diverse institutional settings with particular emphasis on Brazil, South Africa, and the United States. VanderZanden.

Au Qtr. 3 cl. Prereq: 5 cr hrs in sociol.

488 Introduction to Sociological Theory U 5

Introductory statement of the nature of sociological theory, its basic problems, assumptions, major types and orientations, and principal contributions to the discipline. G. Hinkle, R. Hinkle, Meyer, Seidler, and Walum.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 10 cr hrs in sociol.

490 Sociology of Urban Life U 5

The place of the city in social organization; the emergence, nature, and problems of modern urbanism; projects based on census and field data. Jonassen, Schwirian, and Jobu.

Au, Sp Qtrs. 4 cl. Prereq: 5 cr hrs in sociol. Not open to students with credit for 290.

503 Contemporary Soviet Society U G 5

Organization, development, and problems of the Communist Party, the collective farm, the school, professional occupations, economic planning, and other contemporary Soviet institutions.

Sp Qtr. 5 cl. Prereq: 5 cr hrs in sociol. Not open to students with credit for 403.

508 Sociological Interpretation of Modern Values U G 5

Family, organizational, community, institutional, national and international value and value conflicts; relationship to the conflict of values of modern social problems, individual rights, and responsibilities.

Sp Qtr. 5 cl. Prereq: 5 cr hrs in social or permission of instructor.

Cultural Patterns and Personality

See Anthrop 520.

545 American Society U G 5

An exposition of the structural patterns of American society, using sociological theories and data but integrating them into a general view. Li and Walum.

Wi Qtr. 5 cl. H545 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: Jr standing with a cumulative point-hour ratio of at least 3.0.

550 Intermediate Population Studies U 5

A general, mainly non-technical, introduction to population studies; the social determinants and consequences of fertility, morality, and migration. Li and Tien.

Wi Qtr. 3 cl. Prereq: 5 cr hrs in sociol.

589 Fieldwork in Sociology U 5

Practicum in the collection of sociological data through field work: identification of research problem; development of data collection methods; data processing and analysis.

Su Qtr. 2 cl, 2-hrs lab. Prereq: Jr standing and 5 cr hrs in sociol.

590 The Community U G 5

Development of the modern community; approaches to the study of communities; significance of processes and value systems for community organization and disorganization. Jobu, Jonassen, and Schwirian.

Wi, Sp Qtrs. 4 cl. Prereq: 10 cr hrs in sociol.

601* Comparative Family Organization U G 5

Analysis of family organizations in various societies, emphasizing the impact of changing world conditions on family and kinship structures. Clarke.

Wi Qtr. 4 cl. Prereq: 10 cr hrs in sociol. Not open to students with credit for 432.

602 Sociology of Sex Roles U G 5

Sociological aspects of sex differentiation and sex-role behavior, including studies of sexual stratification and division of labor, sex-role socialization, and sex-role performance. Walum.

Sp Qtr. 5 cl. Prereq: 435 or equiv with permission of instructor.

605 Collective Behavior U G 5

Examination of the dynamic social processes characteristic of mass societies through an analysis of crowds, mobs, cults, and publics. Aveni, Quarantelli, Seidler, and Taylor.

Wi Qtr. 5 cl. Prereq: 10 cr hrs in sociol and written permission of instructor. Not open to students with credit for 405.

608 Sociological Aspects of Mass Communication U G 5

Examination of structure and functions of mass communication systems in contemporary mass societies, including the relationship between mass media organizations and other institutions. Quarantelli.

Su Qtr. 5 cl. Prereq: 10 cr hrs in sociol.

610 Sociology of Deviant Behavior U G 5

An examination of the nature, types, and societal reactions to deviant behavior; special emphasis on the process of stigmatization and the emergence of deviant subcultures. Dailey, Dinitz, Lundman, and Scott.

Sp Qtr. 5 cl. Prereq: 10 cr hrs in sociol.

611 Penology U G 5

The treatment of adult offenders in detention and incarcerations; short and long term institutions; field trips required. Dailey, Dinitz, Lundman and Scott.

Au, Sp Qtrs. 5 cl. Prereq: 610 and sr standing. Not open to students with credit for 411.

612 Sociology of Economic Life U G 5

Study of the relationship between economic and noneconomic aspects of life; theory will be supplemented by related research. Helfrich.

Au Qtr. 3 cl, 2 hrs arr. Prereq: 10 cr hrs in sociol.

615 Control and Prevention of Crime and Delinquency U G 5

Analysis of the operational effectiveness of special measures and programs pointed toward the control and prevention of crime and delinquency. Dailey, Dinitz, Lundman, and Scott.

Au Qtr. 1 2-hr cl. One field project. Prereq: 610 and sr standing.

623 Advanced Sociology of Education U G 5

Comparisons of the structures and functions of educational systems, elementary through university; recruitment and allocation of personnel and resources, power, conflict, and boundary maintenance. Corwin.

Wi Qtr. 5 cl. Prereq: 10 cr hrs in sociol. Not open to students with credit for 523.

630 Medical Sociology U G 5

Sociological analysis of health and illness behavior, the social ecology of illness, health organization, and the health professions. Alonzo and Nagi.

Wi Qtr. 5 cl. Prereq: 10 cr hrs in sociol. Not open to students with credit for 730.

640 Sociology of Everyday Life U G 5

A basic course in ethnomethodology; a survey of the basic literature; study of the taken-for-granted, verbal and non-verbal features of social interaction; involves making observations and descriptions. G. Hinkle.
Wi Qtr. 4 cl. Prereq: 10 cr hrs in sociol.

650 Introduction to Quantitative Research Techniques in Sociology U G 5

An introduction to the analysis of sociological data; measurement theory and techniques of interpretation; sampling procedures in sociological research and implications for inference and generalization. Jobu, Li, and Schwirian.
Au, Wi Qtrs. 5 cl.

651 Approaches to Sociological Inquiry U G 5

Theory and practice in essentials of the research process; comparison of alternative approaches and design models; questionnaire construction, interview techniques, and related problems. Jobu and Li.
Wi Qtr. 3 cl, project.

660 Comparative Social Organization U G 5

A comparative analysis of organizational characteristics and functioning in different cultural settings. Dynes and Dyck.
Wi Qtr. 4 cl. Prereq: 10 cr hrs in sociol. Not open to students with credit for 560.

662 Small Groups U G 5

Analysis of group structure and processes; examination of roles, interpersonal structure, leadership; observation of groups in laboratory and non-laboratory settings. Curry.
Au Qtr. 5 cl. Prereq: 10 cr hrs in sociol. Not open to students with credit for 661 or 772.

666 Political Sociology U G 5

Examination of structures, continuities, and processes of change; of models and building blocks; and of social contexts of power and dynamic forces altering political systems.
Wi Qtr. 3 cl. Prereq: 10 cr hrs in sociol.

682 Earlier Developments in Sociological Theory U G 5

Analysis of classical systems and their representatives, e.g., positivistic social evolutionism (Compte, Spencer, Durkheim), historical materialism (Marx-Engels), and humanistic idealistic reactions (Toennies, Simmel, M. Weber). R. Hinkle, Meyer and Seidler.
Au Qtr. 2 2-hr cl. Prereq: Written permission of instructor. Not open to students with credit for 883.

683 Later Developments in Sociological Theory U G 5

Analysis of systematic orientations, e.g., social action (Znaniecki, Maclver, Parsons), functionalism (Parsons, Merton), conflict (Dahrendorf, Coser), social exchange (Blau), ethnomethodology (Garfinkel), newer structuralism (Levi-Strauss). R. Hinkle, Walum and Staff.
Wi, Sp Qtrs. 2 2-hr cl. Not open to students with credit for 782.

693 Individual Studies U-G 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Soc majors and permission of instructor. Repeatable to a maximum of

15 cr hrs for each decimal subdivision.

- 693.01 Sociological Theory
- 693.02 Social Organization and Planning
- 693.03 Medical Sociology
- 693.04 Criminology and Penology
- 693.05 Sociology of Education
- 693.06 Race Relations
- 693.07 Social Psychology
- 693.08 The Family
- 693.09 Research Methodology
- 693.10 Urban Sociology
- 693.11 Undergraduate Seminar on Contemporary Sociological Issues
- 693.12 Unclassified
- 693.13 Population
- 693.14 Collective Behavior

694 Group Studies U G 3-5

Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs for each decimal subdivision. Topics vary each quarter offered.

- 694.01 Sociological Theory
- 694.02 Social Organization
- 694.03 Medical Sociology
- 694.04 Criminology and Penology
- 694.05 Sociology of Education
- 694.06 Race Relations
- 694.07 Social Psychology
- 694.08 The Family
- 694.09 Research Methodology
- 694.10 Urban Sociology
- 694.11 Contemporary Sociological Issues
- 694.12 Unclassified
- 694.13 Population
- 694.14 Collective Behavior

General Prerequisites for Courses Numbered 700

Unless otherwise indicated, the prerequisites for 700-level courses are 30 qtr hrs in the same discipline numbered 400 or higher of which 15 hrs must be at the 600 level.

Introduction to National Security

See Nat Sec Pol S 702.

704†* Problems in the Design of Sociological Research U G 5

Au, Wi, Sp Qtrs. 3 cl, project. Prereq: 250 or equiv. Repeatable to a maximum of 10 cr hrs.

705 Construction and Verification of Theory U G 5

The actual practice of theory construction and its underlying logic. Nagl.

Wi Qtr. 3 cl, project. Prereq: 250 or equiv. Not open to students with credit for 704.01. Repeatable to a maximum of 10 cr hrs.

706†* Experimental Research Methods U G 5

Survey and analysis of research designs and statistical techniques permitting control and/or assessment of error variance in sociological research by experimental method. Curry.

Wi Qtr. 3 cl, project. Prereq: 250 or equiv. Not open to students with credit for 704.02. Repeatable to a maximum of 10 cr hrs.

707 Problems in Quantitative Analysis U G 5

A survey of advanced problems in the multivariate analysis of sociological data; topics covered include elaboration and specification, causal inference in nonexperimental research and path analysis. Schwirian.

Sp Qtr. 5 cl. Prereq: 650 or equiv. Not open to students with credit for 704.03. Repeatable to a maximum of 10 cr hrs.

708 Problems in Qualitative Analysis U G 5

Problems and techniques of non-quantitative data analysis including case studies, participant observation, field diary, autobiography, and historical records. Dynes and Quarantelli.

Sp Qtr. 5 cl.

710†* Social Movements U G 5

An examination of theories and research on non-traditional group efforts to change social systems and institutions; emphasis on contemporary societies and movements. Aveni and Quarantelli.

Sp Qtr. 5 cl. Not open to students with credit for 805.

718 Advanced Criminology U G 5

A critical study of the most important aspects of criminology. Dinitz and Scott.

Sp Qtr. Prereq: 410 or equiv. Not open to students with credit for 818.

751†* Introduction to Advanced Population Studies U G 4

A more intensive introduction to demography parallel to 550; mainly for graduate students in sociology who lack undergraduate training in the field and want to continue in it. Petersen and H. Tien.

Au Qtr. 4 cl. Not open to students with credit for 550 or equiv.

752†* Principles and Techniques of Scale Construction U G 5

Approaches and techniques in the development and testing of social measurement instruments.

Wi Qtr. 3 cl, project. Prereq: 650 or equiv or Soc Work 540.

754†* Demographic Analysis U G 5

An exposition of census data and vital statistics, demographic rates, life tables, cohort analysis, and similar elementary techniques and data sources in demography. Li and Y Tien.

Wi Qtr. 5 cl. Prereq: 1 course in general statistics. Not open to students with credit for 619.

755†* The Social Context of Human Fertility U G 4

A critical and methodological analysis of fertility, with special emphasis on the social context of reproductive behavior in American society. Y Tien.

Wi Qtr. 4 cl.

756†* Migration and Social Mobility U G 5

Theories and models of population mobility; determinants and consequences of the migration process; policy implications of rural-urban migration.

Sp Qtr. 3 cl, 1 lab hr.

770 Individual in Society U G 5

Analysis and synthesis of the major theories and findings of social psychology. Alonzo, Franklin, and G. Hinkle.

Wi Qtr. 5 cl.

780†* Racial and Ethnic Differentiation U G 5

An analysis of the origin, persistence, adaptation and change of systems and racial and ethnic differentiation. Peterson and VanderZanden.

Au Qtr. 3 cl.

781 Foundations of Sociological Theory U G 5

Problems of sociological theory such as the nature and construction of social reality, the relationships between theory and research, theory formation, and issues of a value-free sociology. Walum.

Au Qtr. 2 2-hr cl.

H783 Honors Course U 3-5

A conference-thesis course; subject matter will vary depending upon the student's topic.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing with a grade of A in at least half of the sociol courses and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degree BA *with distinction* in sociol. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 10 cr hrs.

Research Principles and Techniques in National Security

See Nat Sec Pol S 785.

790 Social Organization of the Community U G 5

An examination of the nature, structures, processes, and trends of social organization of modern communities. Jonassen.

Au Qtr. 3 cl.

791 Sociological Methods of Community Analysis U G 5

Methods, techniques, sources of data, and objectives of community analysis. Jonassen and Schwirian.

Sp Qtr. 3 cl. Prereq: 490 or 590 or equiv, and permission of instructor. Not open to students with credit for 894.

792 Structural Sociology U G 5

Key concepts, issues, recent trends in the study of social structure with special emphasis on formal social organizations, social stratification, comparative social systems, groups and research methods. Corwin and Dynes.

Sp Qtr. 5 cl. Prereq: Grad standing in sociol.

General Prerequisites for Courses Numbered 800

Unless otherwise indicated, the prerequisites for 800-level courses are 30 qtr hrs in the same discipline at the 600-level or higher, of which 15 hrs must be at the 700-level.

800 Proseminar in Sociology G 2

Each week an area of specialization within sociology will be discussed by a professor whose major interest is in that area; provides an overview of special topics and current issues. Dynes and Franklin.

Au Qtr. 2 cl. Open only to 1st year grad students in sociol.

802†* Seminars in the Comparative Study of Society: The Middle East G 5

Selected problems in the changing interrelationships among social institutions in the Middle Eastern Countries: politics, economy, education, religion, kinship, and mass media. Nagi.

Sp Qtr. 3 cl.

804†* Seminars in the Comparative Study of Society: Advanced Societies G 5

Analysis of emerging problems in the social order of advanced societies, with special emphasis on the Atlantic Community.

Wi Qtr. 3 cl.

811 Seminar in Industrial Sociology G 1-5

Selected topics in sociology of industrial and work relations; organizational types, change, effectiveness, management, control, administration, leadership, occupations; theoretical approaches to study of industrial relations. Helfrich.

Sp Qtr. Repeatable to a maximum of 10 cr hrs.

820 Seminar in the Sociology of Education G 5

Special problems will be considered in different quarters, including urban education, student movements, bureaucratic-professional problems, school-community relations, and innovation. Corwin.

Wi Qtr. 3 cl. Repeatable to a maximum of 10 cr hrs.

830* Seminar in Medical Sociology: Problems in the Sociology of Health Organization G 5

Analysis of theory and research bearing upon the role of medicine in society and the health organizations on national, community, and institutional levels. Nagi and Petersen.

Wi Qtr. 3 cl. Prereq: 730 or permission of instructor.

831†* Seminar in Medical Sociology: Problems in the Sociology of Mental Illness G 5

Analysis of the sociological concepts of mental illness, the socio-cultural factors in these disorders, and the structure of mental care institutions. Diniz and Nagi.

Wi Qtr. 3 cl. Prereq: 730 or permission of instructor.

833 Seminar in Medical Sociology: Problems in Illness Behavior G 5

Analysis of current issues in health behavior, care seeking behavior, and the delivery of health services. Alonzo.

Sp Qtr. 3 cl. Prereq: 630.

837†* Seminar in Public Opinion and Political Sociology G 5

Selected problems in the study of opinions and opinion climates, with special emphasis on their relation to elections and political institutions in a cross-national context.

Au Qtr. 5 cl. Prereq: Permission of instructor.

840†* Social and Cultural Foundations of Cities and Urbanization G 5

An examination of cultural, material, social, organizational, and political and psychological factors associated with the genesis and nature of urbanization. Jonassen, Jiobu, and Schwirian.

Wi Qtr. 5 cl.

841†* Sociology of Urban Sub-Communities G 5

Examination of society and culture of sub-communities such as ethnic and racial ghettos, suburbia; generalizations about the pattern of integration with larger systems. Jonassen, Jiobu, and Schwirian.

Wi Qtr. 5 cl.

842 Human Ecology G 5

Selected problems of urban structure from the ecological perspective. Jiobu and Schwirian.

Au Qtr. 5 cl. Repeatable to a maximum of 10 cr hrs.

846†* Seminar in the Demography of Urbanization G 5

An analysis of urban phenomena using demographic data and techniques; an analysis of the effect of urbanization on demographic processes. W. Petersen.

Sp Qtr. 5 cl. Prereq: Grad standing in sociol or related discipline; 1 course in population or urban sociology recommended.

848†* Seminar in the Sociology of Religion G 5

An analysis of selected contemporary problems in the sociology of religion; religious organization and involvement. Dynes and Seidler.

Sp Qtr. 3 cl.

850 Seminar in Sociological Research Methods G 1-5

Special topic seminars in research methodology. Schwirian.

Au, Wi Qtrs. Repeatable to a maximum of 30 cr hrs.

854†* Professional Population Training G 5

Wi, Sp Qtrs. Prereq: One course in population.

854.01 Comparative Sociology of Fertility

Comparative analysis of fertility in different societies at different historical periods; analysis of sources of human reproduction in institutional, interactional, and developmental perspectives; data and techniques of fertility analysis. Y. Tien.

854.02 International Migration

Analysis in historical depth of international migration, its statistics, its effects on the two countries and the migrants, and policies to inhibit or encourage international movements. Y. Tien.

854.03 Mortality and Morbidity

Advanced sociological analysis of mortality and morbidity in global perspective, emphasizing the determinants and consequences of illness and mortality trends and theories of mortality differentials; statistical techniques are stressed. Schwirian.

855†* Area Training in Population G 5

Au, Sp Qtrs. Prereq: One course in population.

855.01 Population of China

An assessment of the size, growth, diversity, and distribution of the Chinese population, including some analysis of Chinese populations outside mainland China. Y. Tien.

855.02 Population of Latin America

Comparative analysis of components of demographic structure and change in Latin America; stress on institutional context of fertility, mortality, and migration.

859†* Practicum in Sociological Research G 1-15

Supervised practical experience in the independent execution of sociological research, the application of appropriate analytical techniques, and preparation of research reports. Quarantelli.

Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

861 Seminar in Social Stratification G 5

Major theoretical approaches, differing bases of stratification and methods of analysis. Aveni and Tien.

Wi Qtr. 3 cl. Repeatable to a maximum of 10 cr hrs.

862 Seminar in Complex Organizations G 5

Analysis of bureaucratization, structure, boundary problems, resource allocation, organizational change and conflict. Corwin and Dynes.
Au Qtr. 3 cl.

863 Seminar in Small Groups G 5

A critical examination of theoretical and methodological issues in research on small groups; focus on sociological contributions. Curry.
Sp Qtr.

871 Symbolic Interaction G 5

Analysis of the relationship between the individual and the social structure; particular reference paid to the symbolic interaction orientation. Alonzo, Franklin, and G. Hinkle.
Au Qtr. 5 cl.

882†* Systematic Social Theory in Progress G 5

Examination of the logical structure and empirical status of current and emerging theories. R. Hinkle.
Sp Qtr. 2 2-hr cl.

884 Seminars in Sociology G 1-5

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs for each decimal subdivision.

- 884.01 Sociological Theory**
- 884.02 Social Organization and Planning**
- 884.03 Medical Sociology**
- 884.04 Criminology and Penology**
- 884.05 Sociology of Education**
- 884.06 Race Relations**
- 884.07 Social Psychology**
- 884.08 The Family**
- 884.09 Research Methodology**
- 884.10 Urban Sociology**
- 884.11 Graduate Seminar on Contemporary Sociological Issues**
- 884.12 Unclassified**
- 884.13 Population**
- 884.14 Collective Behavior**

888 Seminar in the American Family G 1-5

An examination of relevant issues, trends, and problems with emphasis on theoretical orientations and research findings. Clarke.
Au Qtr. 5 cl.

899 Interdepartmental Seminar G 1-5

See Interdepartmental Seminars.

998 Research in Sociology: Thesis G Arr

Research for thesis purposes only.
Su, Au, Wi, Sp Qtrs.

999 Research in Sociology: Dissertation G Arr

Research for dissertation purposes only.
Su, Au, Wi, Sp Qtrs. Refer to 884 for registration in proper decimal subdivision.

Spanish

Office: 248 Dieter Cunz Hall of Languages, 1841 Millikin Road, 422-5842

101 Elementary Spanish I

Introduction to Spanish; development of listening, reading, speaking, and writing skills.

Su, Au, Wi, Sp Qtrs.

101.01 Classroom Track U 5

Students must register for and complete 5 cr hrs during the quarter.

101.02 Individualized Track U 1-5

Students register for and complete from 1 to 5 cr hrs during the quarter. Students who complete 5 cr hrs before the end of the quarter may proceed to 102.02. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement.

102 Elementary Spanish II

Continued study of Spanish; development of listening, reading, speaking and writing skills.

102.01 Classroom Track U 5

Prereq: 101.01 or 5 cr hrs of 101.02. Students must register for and complete 5 cr hrs during the quarter.

102.02 Individualized Track U 1-5

Prereq: Grade of B- or above in 101.01 or 5 cr hrs of 101.02 or permission of instructor. Students may register for 101.02 and 102.02 concurrently with permission of instructor. Students register for and complete from 1 to 5 cr hrs during the quarter. Students who complete 5 cr hrs before the end of the quarter may proceed to 103.02. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement.

103 Intermediate Spanish I

Continued study of Spanish; development of listening, reading, speaking, and writing skills; readings based on Spanish culture and literature.

Su, Au, Wi, Sp Qtrs.

103.01 Classroom Track U 5

Prereq: 102.01 or 5 cr hrs of 102.02 or 110. Students must register for and complete 5 cr hrs during the quarter.

103.02 Individualized Track U 1-5

Prereq: Grade of B- or above in 102.01 or 5 cr hrs of 102.02. Students may register for 102.02 and 103.02 concurrently with permission of instructor. Students register for and complete from 1 to 5 cr hrs during the quarter. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement.

104 Intermediate Spanish II U 5

Prereq: 103.01 or 5 cr hrs of 103.02 or 112. The following courses are not open to students with credit for 104, and only one of the decimal subdivisions may be taken for credit.

104.01 Basic Course

Reading of Spanish short stories, plays, and novels with attention to literary appreciation; development of basic language skills; course conducted in Spanish.

Su, Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 104 or any other 104 decimal subdivision.

104.02 Conversation

Emphasis on speaking and aural comprehension; conversation materials and current newspapers.

Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 104 or any other 104 decimal subdivision.

104.03 Culture and Civilization

Aspects of Spanish civilization: geography, history, social developments, and the arts; readings and discussion in Spanish.

Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 104 or any other 104 decimal subdivision.

104.04 Social and Political Thought

Readings on the evolution of social and political ideas in Spanish America; texts in Spanish; discussion in Spanish and English.

Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 104 or any other 104 decimal subdivision.

105 Elementary Spanish Conversation and Composition U 5

125.01 Intensive practice in oral and written Spanish, based on texts and periodicals concerned with contemporary Spain and Spanish America; grammar and idiom review.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 104. Course conducted in Spanish.

110 Intensive Elementary Spanish U 5, 10

Elementary Spanish for students wishing to acquire the basic skills in one quarter; intensive drill in form, syntax, vocabulary, and idiom; equivalent to 101 and 102.

Au, Wi, Sp Qtrs. 10 cl. Prereq: Permission of dept. Not open to students with credit for 102. Students with credit for 101 or the equiv may not register for more than 5 cr hrs.

111 Intensive Intermediate Spanish U 5 or 10

An intensive course that combines the content of 103 and 104.01 to complete the presentation of the basic Spanish grammar and to give extensive practice in the four language skills.

Su, Au, Wi, Sp Qtrs. 5 2-hr cl. Prereq: 110 or 102 or equiv with written permission of instructor. Not open to students with credit for 104 or 104 decimal subdivisions. Students with credit for 103 or 112 may not register for more than 5 cr hrs. Course intended for students who wish to expedite the completion of the language requirement.

112 Intensive Spanish U 5, 10, 15

Elementary and intermediate Spanish; intensive drill in forms, syntax, vocabulary, and idiom; reading of short stories and plays in Spanish.

Su Qtr. 15 cl. Enrollment limited to 25 students. Full time of student and full fees required. Prereq: Permission of dept chairman. Equiv of 101, 102, and 103. Students with credit for 101 or the equiv may not register for more than 10 cr hrs. Students with credit for 101 and 102 or the equiv may not register for more than 5 cr hrs. Students with credit for 103 or the equiv may not register for credit.

162 Elementary-Intermediate Spanish for Selected Students U 5

Wi Qtr. 5 cl. Prereq: Grade of A in 101 and permission of dept. Successful completion of 101-162-163 fulfills the Arts and Sciences foreign language requirement and satisfies prereq for 400-level literature courses.

163 Elementary-Intermediate Spanish for Selected Students U 5

Continuation of 162.

Sp Qtr. 5 cl. Prereq: 162. Successful completion of 101-162-163 fulfills the Arts and Sciences foreign language requirement and satisfies prereq for 400-level literature courses.

271 Spanish Literature in Translation: Medieval and Golden Age U 3

Selection of major works in Spanish literature from the medieval period through the Golden Age in translation.

Au Qtr. 3 cl. Prereq: English 110 or equiv. Not open to Spanish majors.

272 Contemporary Spanish Literature in Translation U 3

Selection of major works in Spanish literature from the 19th and 20th centuries in translation.

Wi Qtr. 3 cl. Prereq: English 110 or equiv. Not open to Spanish majors.

273 Spanish-American Literature in Translation U 3

Selection of major works in Spanish-American literature in translation.

Sp Qtr. 3 cl. Prereq: English 110 or equiv. Not open to Spanish majors.

293 Individual Studies U 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 cr hrs.

294 Group Studies U 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 cr hrs.

401 Review Grammar and Composition U 3

Review of Spanish grammar; composition on assigned topics and practice in translation.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 105.

402 Intermediate Spanish Conversation and Composition U 3

Vocabulary building, practice in speaking Spanish, conversation and composition dealing with aspects of Spanish life.

Au, Sp Qtrs. 3 cl. Prereq: 105.

403 Intermediate Spanish Conversation and Composition U 3

Vocabulary building, practice in speaking Spanish, conversation and composition dealing with aspects of Spanish and Spanish American life.

Su (1st term), Wi Qtrs. 3 cl. Prereq: 105.

404 Spanish Pronunciation U 5

Abundant practice with corrective exercises; some attention to problems of teaching pronunciation.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 105.

421 Introduction to Modern Spanish Literature U 5

Spanish literature and literary movements of the 19th and 20th centuries and their relation to modern Spain.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 104.

422 Spanish Literature: Middle Ages through Golden Age U 5

Reading and discussion of the principal works in Spanish literature from the Cid through the Golden Age.

Wi, Sp Qtrs. 5 cl. Prereq: 421.

423 Introduction to Modern Spanish-American Literature U 5

Selections from Spanish-American literature of the late 19th and 20th centuries.

Au, Wi Qtrs. 5 cl. Prereq: 421.

571 Basic Spanish for Graduate Students G 5

Designed primarily for students who have no formal preparation in Spanish covering basic grammar and vocabulary.

Au Qtr. 5 cl. Prereq: Grad standing. Credit does not apply to the minimum number of hrs required for the master's or doctoral degree. No audit.

572 Spanish for Research I G 3

Wi Qtr. 3 cl. Prereq: Grade of C or above in 571, or equiv preparation demonstrated by a placement test. Credit does not apply to the minimum number of hrs required for the master's or doctoral degree. No audit. Repeatable twice. Satisfactory completion of this course (grade of A or B) may be accepted by the student's dept as evidence of a dictionary reading knowledge in fulfillment of PhD language requirement.

573 Spanish for Research II G 3

Sp Qtr. 3 cl. Prereq: Grade of A or B in 572, or equiv preparation demonstrated by a placement test. Credit does not apply to the minimum number of hrs required for the master's or doctoral degree. No audit. Repeatable twice. Satisfactory completion of this course (grade of A or B) may be accepted by the student's dept as evidence of a thorough reading knowledge in fulfillment of PhD language requirement.

605 Advanced Composition and Conversation U G 3

History, customs, and manners of Spain and Spanish America.

Su (2nd term), Au, Wi, Sp Qtrs. 3 cl. Prereq: 401 and 402 or 403. Conducted in Spanish.

607 Modern Spanish Syntax U G 5

Systematic study of Spanish grammar with composition and other exercises based on contemporary authors; modern tendencies in syntactic analysis.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 421, 401, and 402 or 403.

608 Spanish Translating U G 3

Translation from Spanish to English and from English to Spanish.

Wi Qtr. 3 cl. Prereq: 607 or equiv.

609 Spanish Phonetics U G 5

A detailed analysis of the phonological structure of Spanish and a contrastive comparison with English; practical problems of pronunciation and of teaching are stressed.

Au, Sp Qtrs. 4 cl, 1 hr lab. Prereq: 404 or permission of instructor.

610† Contrastive Structures of Spanish and English U G 5

Phonetics, phonemics, morphology, and syntax of Spanish contrasted with English.

Au Qtr. 5 cl. Prereq: 401, 402 or 403, 404, and 421.

621 Cervantes U G 5

An intensive study of Don Quixote. Levisi.

Au, Sp Qtrs. 4 or 5 cl. Prereq: 421, and 422 or 423.

622* Romanticism in the Hispanic World U G 3

A study of dramatists, poets, novelists, and essayists designed to bring out the literary unity of the Hispanic world in the Romantic period.

Au Qtr. 3 cl. Prereq: 421, and 422 or 423.

623†* Spanish Novel of the 19th Century U G 5

A study of the development of the modern Spanish novel with particular attention to the works of Perez Galdos.

Au Qtr. 4 or 5 cl. Prereq: 421, and 422 or 423.

624†* Contemporary Spanish Fiction U G 3

A study of Spanish narrative prose from the generation of '98 to the present time. Summerhill.

Sp Qtr. 3 cl. Prereq: 421, and 422 or 423.

625* Modern Drama U G 3

A survey of European drama at the beginning of the century and a detailed study of the Spanish dramatists from Benavente to Alfonso Sastre. Summerhill.

Wi Qtr. 3 cl. Prereq: 421, and 422 or 423.

626* Spanish American Literature through Romanticism U G 5

A study of the chronicles and main trends in colonial Spanish American literature; works of the Inca Garcilaso, Sor Juana and Alarcon will be included. Rojo.

Sp Qtr. 5 cl. Prereq: 10 cr hrs in Spanish literature at the 400 level.

627†* Spanish American Literature since Romanticism U G 5

The advent of 'americanismo literario'; a study of the romantics and the schools that followed up to 'modernismo.' Jimenez.

Sp Qtr. 5 cl. Prereq: 10 cr hrs in Spanish literature at the 400 level.

628†* Contemporary Spanish American Fiction U G 5

The development of narrative prose in Spanish America from the Second World War to the present. Jimenez.

Wi Qtr. 5 cl. Prereq: 421, and 422 or 423.

629* The Generation of 1898 U G 3

Readings in fiction, poetry, and the essay from such authors as Unamuno, Azorin, Valle-Inclan, Baroja, A. Machado, and J. R. Jimenez. Garcia and Summerhill.

Wi Qtr. 3 cl. Prereq: 421, and 422 or 423.

630†* Contemporary Hispanic Poetry U G 5

Currents of Spanish and Spanish American poetry from Ruben Dario to the present time.

Au Qtr. 5 cl. Prereq: 421, and 422 or 423.

631 Spanish Literature U G 2-5

Su Qtr. 5 cl. Prereq: 421, and 422 or 423. Repeatable to a maximum of 15 cr hrs.

632†* Early Spanish American Fiction U G 5

The origin and development of the Spanish American novel to the 1930's. Rojo.

Au Qtr. 5 cl. Prereq: 421, and 422 or 423.

633 Spanish Amer Theatre 2/78**693 Individual Studies U G 1-15**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

694 Group Studies U G 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

634 Span Am Short Story 2/78

698† Study Tour of Hispanic America U G 15

Sp Qtr. Prereq: Minimum of 25 cr hrs in Span and permission of dept chairman. Not open for grad credit to majors in Spanish. The first five weeks will be devoted to intensive study of Spanish on this University campus; the remainder of the course will be spent in travel in South America; while traveling, formal language instruction will be given by the tour leader; in South America, only Spanish will be spoken.

721* Drama of the 16th and 17th Centuries U G 5

An intensive study of a limited number of plays of the representative dramatists of the 16th and 17th centuries. Larson.

Sp Qtr. 5 cl. Prereq: 421, and 422 or 423.

722* Poetry of the 16th and 17th Centuries U G 5

Major poets and movements of the 16th and 17th centuries. Levisi and Larson.

Wi Qtr. 5 cl. Prereq: 10 cr hrs in Spanish literature at the 400 level.

723†* Prose of the 16th and 17th Centuries U G 5

Selected prose works by major Renaissance and Baroque authors. Levisi.

Wi Qtr. 4 or 5 cl. Prereq: 421, and 422 or 423.

H783* Honors Course in Spanish U 3-5

This course offers undergraduates with special aptitudes a greater opportunity to do independent study than is possible in the ordinary course.

Su, Au, Wi, Sp Qtrs. Conference, library or phonetics laboratory arr. Prereq: 4th yr standing with a record of A in at least half of the Spanish courses and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Repeatable to a maximum of 15 cr hrs.

811 History of the Spanish Language G 3

Basic concepts of historical linguistics; the major factors of change in the history of the Spanish language from Roman times to the present. Griffin and Lopez-Morillas.

Au Qtr. 3 cl. Prereq: MA candidacy or permission of instructor.

812 Old Spanish I G 3

The development of Old Spanish phonology and morphology with an introduction to the reading of Old Spanish texts. Griffin.

Wi Qtr. 3 cl. Prereq: 811 or permission of instructor.

813 Old Spanish II G 3

A continuation of Old Spanish I, with attention to syntax, vocabulary, and dialectology. Griffin.

Sp Qtr. 3 cl. Prereq: 812.

814† The Structure of the Spanish Language G 5

Examination of the structure of Spanish; the contributions of statistics, computers and generative (transformational) grammar to the study of language.

Au Qtr. 5 cl. Prereq: 610 or permission of instructor.

815† Spanish Language in America G 3-5

A linguistic approach to the theoretical and practical problems of Spanish-American dialectology.

Wi Qtr. Prereq: 610 or permission of instructor.

820 Introduction to Medieval Literature G 3

Selected readings in Spanish poetry and prose from the beginning to the end of the 15th century, partly in modernized versions. Pardo.

Au Qtr. 3 cl. Prereq: MA candidacy or permission of instructor.

821 Old Spanish Literature G 3

A literary approach to medieval poetry and prose. Pardo.

Wi Qtr. 3 cl.

822* Topics and Problems in Spanish Literature: Golden Age G 5

Intensive exploration of a special topic or problem. Levisi and Larson.

Wi Qtr. 3 cl. Prereq: 20 cr hrs in Spanish literature at the grad level. Qualified MA candidates may register with permission of instructor.

823* Topics and Problems in Spanish Literature: 19th Century G 5

Intensive exploration of a special topic or problem. Garcia.

Sp Qtr. 3 cl. Prereq: 20 cr hrs in Spanish literature at the grad level. Qualified MA candidates may register with permission of instructor.

824* Topics and Problems in Spanish Literature: 20th Century G 5

Intensive exploration of a special topic or problem. Summerhill.

Au Qtr. 3 cl. Prereq: 20 cr hrs in Spanish literature at the grad level. Qualified MA candidates may register with permission of instructor.

825†* Topics and Problems in Spanish Literature: Spanish American Literature G 5

Intensive exploration of a special topic or problem. Jimenez and Rojo.

Sp Qtr. 3 cl. Prereq: 20 cr hrs in Spanish literature at the grad level. Qualified MA candidates may register with permission of instructor.

831 Seminar in Spanish Literature G 3-5

Su (1st term), Au Qtrs. Prereq: Permission of instructor.

832 Seminar in Spanish Literature G 2-5

Su (2nd term), Wi Qtrs. Prereq: Permission of instructor.

833 Seminar in Spanish Literature G 3-5

Sp Qtr. Prereq: Permission of instructor.

885 Introduction to Methods in the History and Criticism of Literature G 5

Selected readings in basic literary history, criticism, and theory, with practice in the use of standard bibliographical aids to scholarship. Larson.

Au Qtr. 5 cl.

886† Bibliography and Method G 3

Introduction to problems, tools, and methods of linguistic and literary research. Garcia.

Au Qtr.

Medieval and Renaissance Culture

See Medvl and Renais S 888.

Medieval and Renaissance Literature

See Medvl and Renais S 889.

893 Individual Studies G 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

894 Group Studies G 1-15

Investigation of minor problems in the various fields of Spanish literature and language.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 30 cr hrs.

999 Research in Spanish Language or Literature G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

Speech Communication

See courses in Communication.

Statistics

Office: 128 Cockins Hall, 1958 Neil Avenue, 422-2866

125 Elementary Mathematical Statistics U 5

Elementary principles of probability and introduction to the use of the binomial and normal distributions.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: Satisfactory score on OSU Math Placement Test (Level 3). Not open to students with credit for Econ 442, Ed 786, Genetics 650, Polit Sc 685, Psych 220, 510, or Sociol 380.

133 Statistics for the Business Sciences U 4

Introduction to the basic concepts of probability and statistics; sample statistics, discrete and continuous probability distributions; confidence intervals, and estimation.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: Math 132. Not open to students with credit for 123 or Math 123, or 120.05 or 120.06.

180 Choice and Chance U 5

A liberal arts course presenting the concepts of probability, statistical uncertainty, and decision-making, and their role in society and science.

Au, Sp Qtrs. 5 cl. Prereq: Level 3 placement on OSU Math Placement Test and permission of dept; or permission of instructor. Not open to students with credit for any stat course.

223 Elementary Decision Theory U 5

Descriptive statistics, probability, utility, Bayes strategies, minimax strategies, and statistical inference.

Su, Wi Qtrs. 5 cl. Prereq: Math 116, or 131, or 150.

421 Introduction to Statistics U 5

Combinatorial probability, fundamental concepts of probability distributions, sample statistics, estimation and testing hypotheses, roots of statistical theory.

Au, Wi, Sp Qtrs. Prereq: Math 254 or written permission of chairman.

425 Probability and Statistics I U 5

Elements of discrete and continuous probability; introduction to estimation and testing of hypotheses.

Au, Wi, Sp Qtrs. Prereq: Math 254 or permission of chairman.

426 Probability and Statistics II U 5

Continuation of 425.

Au, Wi, Sp Qtrs. Prereq: 425.

485 Senior Seminar in Statistics U 3

Student presentation of selected topics under the guidance of a faculty member.

Au Qtr. 3 cl. Prereq: Sr undergrad majors in stat or in mathematical sciences, or written permission of instructor.

494 Group Studies U 3-5

Designed to give groups of students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

505 Introduction to Analysis, Probability, and Statistics I U G 5

Mathematical methods and concepts related to applications in the business and social sciences.

Au, Wi, Sp Qtrs. 5 cl. Prereq: Permission of instructor or grad standing in MBA or MPA programs and previous training in calculus. Not open to students with credit for 123 or 133 or any higher level math or stat course.

506† Introduction to Analysis, Probability, and Statistics II U G 5

Continuation of 505.

Wi Qtr. 5 cl. Prereq: 505. Not open to students with credit for 123 or 133.

518 Statistical Theory in Medical Research I U G 3

Fundamental concepts of probability, random variables, statistical inference, regression and correlation analysis; topics selected from bioassay, life table techniques, computers in medicine.

Au Qtr. 3 cl. Prereq: Permission of instructor or grad students in medical sciences.

519 Statistical Theory in Medical Research II U G 3

Continuation of 518.

Wi Qtr. 3 cl. Prereq: 518.

520 Mathematical Statistics I U G 5

Probability, random variable, discrete and continuous distribution; binomial, Poisson, normal, gamma (chi-square), t, F, distributions; change of variable and moment-generating function techniques; order statistics; limit theorems.

Su, Au, Wi Qtrs. 5 cl. Prereq: Math 254 or written permission of chairman. Not open to students with credit for 620.

521 Mathematical Statistics II U G 5

Confidence intervals; minimum variance unbiased estimation, maximum likelihood estimation; Neyman-Pearson theorem, uniformly most powerful tests, likelihood ratio tests, chi-square and F tests, nonparametric tests.

Su, Wi, Sp Qtrs. 5 cl. Prereq: 520. Not open to students with credit for 621.

525 Statistical Methods U G 5

Basic concepts of probability and statistical inference; application to models involving binomial, Poisson, and normal distributions, and linear regression.

Au, Sp Qtrs. Prereq: Math 254 or equiv and permission of instructor; or Math 254 or equiv and grad standing.

528 Data Analysis I U G 3

Non-calculus treatment of descriptive statistics, statistical inference, goodness of fit, use of t , F , X^2 in one sample situation.

Su, Au, Wi Qtrs. 2 cl, lab hrs arr. Prereq: Permission of instructor or grad standing. Not open to students with more than 5 cr hrs in stat.

529 Data Analysis II U G 3

Two sample tests, non-parametric one and two sample procedures, regression analysis, one and two way analysis of variance.

Su, Wi, Sp Qtrs. 2 cl, lab hrs arr. Prereq: 528.

532† Discrete Probability U G 3

The nature of probability theory, elements of combinatorial analysis, conditional and marginal probabilities, law of large numbers, probability generating functions, random walk, Markov chains.

Wi Qtr. 3 cl. Prereq: 426 or 520.

593 Individual Studies U G 2-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

600 Statistics Laboratory U G 1-5

Experience is given the student in working with real data through association with current projects in the Statistics Laboratory.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

620 Statistical Theory I U G 4

The first of a three-course sequence covering the theory of statistical inference, probability, random variables, estimation, tests of hypothesis.

Au Qtr. 4 cl. Prereq or concur: Math 548 or 550. Not open to students with credit for 520.

621 Statistical Theory II U G 4

Continuation of 620.

Wi Qtr. 4 cl. Prereq: 620 or written permission of instructor. Not open to students with credit for 521.

622 Statistical Theory III U G 4

Continuation of 621.

Sp Qtr. 4 cl. Prereq: 621. Not open to students with credit for 521.

623† Mathematical Statistics Supplement U G 3

Distributions of sample statistics, order statistics, limit theorems, sufficient and efficient estimates, likelihood ratio tests.

Au Qtr. 3 cl. Prereq: 426 or equiv and permission of instructor. Not open to students with credit for 521.

632 Applied Stochastic Processes I U G 3

Normal processes and covariance stationary processes, counting processes and Poisson processes, renewal processes.

Wi Qtr. 3 cl. Prereq: 520 or Math 520.

633 Applied Stochastic Process II U G 3

Branching process, queueing theory, stationary processes and renewal theory. Srivastava and Staff.

Sp Qtr. Prereq: 632.

635 Statistical Analysis of Time Series U G 3

Time series models; estimation of the spectral density function; transformations of time series; prediction theory applications.

Au Qtr. Prereq: 521 or 623 or permission of instructor.

641 Linear Models U G 3

The general linear model for regression and experimental designs; properties of least square estimates; distribution of quadratic forms and the analysis of variance table.

Wi Qtr. 3 cl. Prereq: 426 or 521, and an elementary knowledge of matrix theory and notation.

645 Applied Regression and Design U G 5**645.01 Applied Regression and Design**

Su Qtr. 5 cl. Prereq: Background in stat equiv to 10 cr hrs and grad standing, or permission of instructor. Not open to students with credit for 645 or 645.02.

645.02 Applied Regression and Design

Au, Sp Qtrs. 5 cl. Prereq: 426 or 521 or 525. Not open to students with credit for 645 or 645.01.

651 Survey and Sampling Theory U G 3

Sampling from finite populations, multistage sampling, stratification, regression and ratio estimates, non-sampling errors, applications to large scale sample surveys.

Wi Qtr. 3 cl. Prereq: 426 or 521 or permission of instructor.

655 Multivariate Data Analysis U G 5

Graphical analysis of multivariate procedures, clustering and classification procedures, multivariate normal proceedings, correlation and regression in multivariate analysis, modern data analytic techniques for multivariate data, applications.

Su, Wi Qtr. Prereq: 519, 529, or equiv.

656 Applied Multivariate Analysis U G 5

Multivariate statistical procedures specially related to the normal distribution multivariate analysis of variance, classification, principal components and elements of factor analysis, applications, nonparametric multivariate procedures.

Au Qtr. Prereq: 426 or equiv.

661 Applied Nonparametric Statistics U G 5

Non-calculus treatment of nonparametric tests, confidence intervals, estimation; topics include one- and two-sample problems, one- and two-way analysis of variance, multiple comparisons, correlation.

Su, Wi, Sp Qtrs. Prereq: 426 or 521 or permission of instructor.

671 Simulation and Monte Carlo Techniques U G 5

The use of digital computer program in simulating the operating characteristics of a complex system and in approximating solutions by random sampling; programming applications.

Su, Sp Qtrs. 3 cl. Prereq: 425 or 520 or 525 or 529 or equiv and some knowledge of computer programming, or permission of instructor.

693 Individual Studies U G 1-5

Individual conferences, assigned readings, and reports on minor investigations.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

694 Group Studies U G 2-5

Designed to give groups of students an opportunity to pursue special studies not otherwise offered.
Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.
Repeatable to a maximum of 20 cr hrs.

720* Distribution Theory U G 3

Important distributions, independent statistics, characterization of distribution by independence, constant regression and other properties, contiguous, infinitely divisible and stable distributions. Srivastava and staff.
Sp Qtr. 3 cl. Prereq: 521 and Math 550.

725* Sequential Statistical Methods U G 3

Wald's SPRT, its characteristics and generalizations; sequential estimates, intervals, designs, and multiple-decisions; nonparametric, Bayes, and optimal sequential procedures.
Au Qtr. 3 cl. Prereq: 521 or 623, and Math 550.

742 Analysis of Variance U G 3

Theory of the general linear model; least square estimates and properties, especially in non-full rank models; analysis of variance technique; factorial designs.

Au Qtr. 3 cl. Prereq: 521 or 623; Math 550; and Math 471 or 571 or 601.

746 Design and Analysis of Experiments U G 3

A continuation of 742; various experimental designs; analysis of covariance, mixed and random models.
Wi Qtr. 3 cl. Prereq: 742.

751 Survey Sampling Theory U G 4

Theory of sampling from finite populations, simple random and unequal probability sampling, stratification, ratio and regression estimates, cluster sampling, recent developments.

Su Qtr. 3 cl, 1 lab hr arr. Prereq: 521 or 621 or 623 or permission of instructor.

755 Multivariate Analysis I U G 3

Multivariate normal distribution, Wishart distribution, Hotelling's T^2 , multivariate analysis of variance, multiple correlation, roots of determinant equations, discriminant functions, and applications.

Wi Qtr. 3 cl. Prereq: 521 or 623; Math 471 or 571 or 601; and Math 551.02 or 623.

756 Multivariate Analysis II U G 3

Continuation of 755.

Sp Qtr. 3 cl. Prereq: 755.

761 Nonparametric Statistics I U G 3

Exact distributions and moments of order statistics, probability integral transformation, coverages, tolerance intervals, empirical distribution function, ranking methods, asymptotic relative efficiency, distribution-free tests.

Au Qtr. 3 cl. Prereq: 521 or 623.

763 Nonparametric Statistics II U G 3

Distribution-free tests for: two-sample problem, ANOVA and multiple comparisons, rank correlation, slopes in linear regression, broad alternatives; distribution-free confidence intervals; nonparametric point estimation.

Sp Qtr. 3 cl. Prereq: 761.

777†* Optimizing Methods in Statistics U G 3

Survey of classical optimizing techniques with applications in statistics, mathematical programming and constrained estimation, variational methods and

dynamic programming applied to statistical problems, miscellaneous applications.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

821 Statistical Inference I G 3

Classical and modern statistical inference from advanced point of view, estimation, principles of maximum likelihood, Asymptotic theory; completeness, sufficiency and invariance.

Wi Qtr. 3 cl. Prereq: 521 or 623, and Math 722.

822 Statistical Inference II G 3

Sp Qtr. 3 cl. Prereq: 821 or Math 824.

824 Statistical Decision Theory I G 3

Introduction to the theory of games, statistical games, admissibility and completeness, complete class theorem, principles of sufficiency and invariance, sequential games.

Au Qtr. 3 cl. Prereq: Permission of instructor.

825 Statistical Decision Theory II G 3

Continuation of 824.

Wi Qtr. 3 cl. Prereq: 824 or Math 826.

828* Ranking, Selection, and Multiple-Decision G 3

Ranking and selection: indifference-zone and subset; multivariate, nonparametric, multivariate nonparametric, multiple-comparisons, and ordered parameters problems; optimality, robustness, efficiency, and applications.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

832* Applied Probability Models G 3

Birth and death processes, Queueing Theory, Branching processes and other applied probability models.

Au Qtr. 3 cl. Prereq: Math 722.

834* Statistical Inference for Stochastic Models G 3

Theory of statistical inference for Markov Chains and other applied probability models.

Wi Qtr. 3 cl. Prereq: 832.

847†* Advanced Design of Experiments G 3

Partially balanced designs, factorial experiments, confounding and factorial replications, response surface designs.

Sp Qtr. Prereq: 746 or Math 721.

881 Advanced Topics in Mathematical Statistics I G 3

Topics to be taken from the following: multivariate analysis, stochastic processes, analysis of variance, components of variance models, advanced test design.

Su Qtr. 3 cl. Prereq: Permission of instructor.

882 Advanced Topics in Mathematical Statistics II G 3

Continuation of 881.

Su Qtr. 3 cl. Prereq: 881 or Math 925.

888* Large Sample Theory G 3

Mann-Wald theory of stochastic order relationships; asymptotic distribution of maximum likelihood estimates and likelihood ratio statistic, large deviation theory, asymptotic theory of well-known statistics.

Au Qtr. 3 cl. Prereq: 822.

895 Statistics Seminar G 1

Topics range over the current research interests of statisticians from around the world; some lectures are of an expository nature.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Permission of dept. Repeatable to a maximum of 10 cr hrs.

999 Research G Arr

Research for thesis or dissertation purposes only. Su, Au, Wi, Sp Qtrs.

Surgery

Office: N-747 University Hospital, 410 West 10th Avenue, 422-4836

715 Clinical Surgery P 6 or 12

The student serves as clinical clerk both in inpatient and outpatient departments on the General Surgical Services, with instruction in total patient care.

Offered all months. Prereq: Med 3rd yr standing. Must repeat to 12 cr hrs.

736 Clinical Surgery P 5, 6, or 11

Total inpatient and outpatient management of surgical disease; emergency room, orthopaedics, neurosurgery, thoracic surgery, plastic surgery, urology, pediatric general surgery, and general surgery.

Offered all months.

790 Research Studies in Surgery

1, 2, 3, or 4 months (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs for grad credit.

790.02 General Surgery P 6, 12 G 3-5

1 or 2 months; offered all months. Repeatable to a maximum of 12 cr hrs for professional credit.

790.03 Neurological Research P 6, 12, 18 G 3-5

1, 2, or 3 months; offered all months. Repeatable to a maximum of 18 cr hrs for professional credit.

790.04 Orthopaedics P 6, 12, 18 G 3-5

2, 3, or 4 months; offered all months. Must repeat to a minimum of 12 cr hrs; may repeat to a maximum of 24 cr hrs for professional credit.

790.05 Pediatric Surgery P 6, 12 G 3-5

1 or 2 months; offered all months. Repeatable to a maximum of 12 cr hrs for professional credit.

790.06 Urology P 6, 12 G 3-5

1, 2, or 3 months; offered all months. Repeatable to a maximum of 12 cr hrs for professional credit.

790.08 Plastic Surgery P 6, 12, 18 G 3-5

1, 2, 3, or 4 months; offered all months. Repeatable to a maximum of 24 cr hrs for professional credit.

790.09 Thoracic Surgery P 6, 12, 18 G 3-5

1, 2, or 3 months; offered all months. Repeatable to a maximum of 18 cr hrs for professional credit.

790.10 Peripheral Vascular Surgery P 6, 12, 18

Clinical clerkship in peripheral vascular surgery. 1, 2, or 3 months.

791 Clinical Studies in Surgery

Prereq: Permission of instructor.

791.02 Emergency Room P 6

1 month, offered all months.

791.03 Neurological Surgery P 6, 12, 18

1, 2, or 3 months; offered all months except June. Repeatable to a maximum of 18 cr hrs.

791.04 Orthopaedics P 6, 12, 18

1, 2, 3, or 4 months; offered all months. Repeatable to a maximum of 24 cr hrs.

791.05 Pediatric Surgery P 6

1 month, offered all months.

791.06 Urology P 6

1, 2, or 3 months; offered all months.

791.07 General Surgery P 12 or 24

Offered all months. Repeatable to a maximum of 24 cr hrs.

791.08 Plastic Surgery P 6, 12, 18

1, 2, or 3 months; offered all months except August and Oct. Repeatable to a maximum of 18 cr hrs.

791.09 Thoracic Surgery P 6

1 months, offered all months.

798 Internship in Surgery P 18

Broad exposure to surgical principles and practices one-half general surgery, one-half surgical specialties; experience in operating rooms, wards, and emergency room; rounds, conferences.

Su, Au, Wi, Sp Qtrs. Prereq: Appointment as Intern, College of Medicine. Repeatable to a maximum of 72 cr hrs.

799 Residency in Surgery P 18

Rotation through general surgery and surgical specialties rounds, and conferences.

Su, Au, Wi, Sp Qtrs. 12 months full time, beginning July 1. Prereq: Appointment as Resident, College of Medicine. Repeatable to a maximum of 360 cr hrs.

850 Seminar in Surgery G 3 or 5

Group and individual discussions of current surgical problems and their management; discussions of basic and applied topics. Carey and staff.

Su, Au, Wi, Sp Qtrs.

999 Research in Surgery G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs.

Textiles and Clothing

Office: 151 Campbell Hall, 1787 Neil Avenue, 422-8063

074 Clothing: Technique Studio U 1

Basic construction techniques needed before registering for 374.

Au, Wi, Sp Qtrs. 1 2-hr lab. Prereq: Clothing Placement

Test taken and results received prior to quarter of enrollment. Credit does not apply for graduation.

270 Clothing Selection and Costume Design U 3

An introduction to costume design with application of aesthetic principles. Rudd.

Au, Wi, Sp Qtrs. 2 cl, 1 2-hr lab. Prereq: Art 190, 290 or Hist Art 111 (or equiv with written permission of instructor). Not open to students with credit for Home Ec 270.

272 Clothing and Humanity U 3

Emphasis is placed on the significance and use of textiles and clothing to individuals and families in contemporary society. Rudd.

Au, Wi Qtrs. 3 cl. Prereq: 5 cr hrs of sociol or psych.

289 Introductory Field Experience U 3 or 5

A practical application of information gained from textiles and clothing courses; opportunity to explore occupations and requirements in the field.

Au, Wi, Sp Qtrs. Prereq: Dept majors with 6 cr hrs in dept, 2.25 cumulative point-hour ratio and written permission of instructor.

294 Group Studies U 2, 3, or 5

Selected topics in textiles and clothing.

Prereq: Open to students who meet dept's stated prereqs. Not open to students with maximum allowable credit for 294.03 or 294.04 or Home Ec 294.03 or 294.04. Repeatable to a maximum of 10 cr hrs.

370 Fashion Design and Illustration U 3

Creative approach to the study of clothing through fashion illustration and costume design. Student will be prepared to communicate fashion information in various ways. Rudd.

Wi, Sp Qtrs. 1 cl, 4 hrs lab. Prereq: 270 (or Home Ec 270) or equiv with written permission of instructor; 3rd yr standing.

371 Textiles I U 5 2nd yr. standing

Study of the physical and chemical properties of textiles and their components as they relate to care, performance and consumer satisfaction. Scruggs and Butler.

Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 10 cr hrs of chem and soph standing. Not open to students with credit for Home Ec 371.

374 Clothing I U 5

Adaptation of standard patterns to individual proportions, flat pattern designing, and application of principles of design and construction in making garments.

Au, Wi, Sp Qtrs. 2 cl, 6 hrs lab. Prereq: 270 (or Home Ec 270) and skill in basic construction. 371 (or Home Ec 371) recommended but not required. Students must achieve the minimum score or above on Clothing Placement Test or complete Technique Studio (074) before enrolling in 374. Not open to students with credit for Home Ec 374.

470 Clothing: Fashion and the Ready-to-Wear Market U 3

Fashion, the ready-to-wear market, and current issues and developments in the textile and apparel industries.

Au Qtr. 3 cl. Prereq: 3rd yr standing. Not open to students with credit for Home Ec 470.

474 Clothing II U 3-5

Experimentation in and analysis of design and fit of garments; couture construction techniques; analysis of price-quality relation for garments. Scruggs.

Au, Wi Qtrs. 1 cl, 4 hrs lab. Prereq: 374 or Home Ec 374. Variable credit determined by options selected.

570 Fashion and the Apparel Industry U 5

Fashion, the ready-to-wear market, and current issues and developments in the textile and apparel industries.

Sp Qtr. 5 cl. Prereq: 3rd yr standing. Not open to students with credit for 470 or Home Ec 470.

571 Textiles II U 5

Advanced study of chemical and physical textile properties; new developments; standards and testing procedures used in evaluation of textiles. Lapitsky and Butler.

Au, Sp Qtrs. 4 cl, 1 2-hr lab and 1 hr arr. Prereq: 371 (or Home Ec 371) and 3rd yr standing. Not open to students with credit for 471 or Home Ec 471.

574 Clothing: Tailoring U 5

Evaluation and application of design and fashion principles in relation to tailored garments; quality-price relationship; optimum utilization of materials and resources. Millican and Rudd.

Au, Wi Qtrs. 2 cl, 6 hrs lab. Prereq: 374 (or Home Ec 374) or 474. Not open to students with credit for 673 or Home Ec 673.

589 Field Work U 15

Cooperative retail field experience at the junior executive level; investigation and analysis of assigned problems.

Au Qtr. Prereq: 4th yr standing in fashion merchandising option, 2.25 cumulative point-hour ratio, 16 cr hrs in major requirements and 7 cr hrs in supporting area; written permission of instructor. No other courses should be taken during qtr of field work without written permission of field work supervisor.

593 Individual Studies U 2, 3 or 5

Problems in various phases of Textiles and Clothing chosen for individual study.

Su, Au, Wi, Sp Qtrs. 1 or more conf. H593 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Prereq: Minimum of 6 cr hrs in subject matter of problem with cumulative point-hour ratio of 2.7 or written permission of instructor. Not open to students with maximum allowable credit for 593.03 or 593.04 or Home Ec 593.03 or 593.04. Repeatable to a maximum of 10 cr hrs.

671 Textile Analysis and Evaluation U G 3

Experience in planning and conducting textile tests and in evaluating resulting data; development, present status, and importance of textile testing. Butler.

Su, Wi Qtrs. 1 cl, 2 2-hr labs and 1 hr arr. Prereq: 571 or 471 (or Home Ec 471); and 4th yr standing. Not open to students with credit for Home Ec 671.

672 History of Costume and Textiles U G 5

A chronological study of costume and textiles from ancient civilization to modern times, with consideration of cultural forces that affected the development. Millican.

Au, Wi Qtrs. 5 cl. Prereq: 371 (or Home Ec 371) and 3rd yr standing. Not open to students with credit for Home Ec 672.

674 Clothing: Advanced Design Analysis U G 5

Creative interpretation of dress design terminating in finished garments developed through the media of flat pattern and draping. Millican and Meacham.

Su, Wi, Sp Qtrs. 2 cl, 6 hrs lab. Prereq: 374 (or Home Ec 374) or equiv with written permission of instructor. Not open to students with credit for Home Ec 674.

690 Workshop U G 4

Full time for 3 wks. Prereq: Written permission of instructor. Not open to students with maximum allowable credit for 690.03 or 690.04 or Home Ec 690.03 or 690.04. Repeatable to a maximum of 12 cr hrs.

694 Group Studies U G 2, 3, or 5

Selected topics in textiles and clothing.

Prereq: Open to students who meet dept's stated prereqs. Not open to students with maximum allowable credit for 694.03 or 694.04 or Home Ec 694.03 or 694.04. Repeatable to a maximum of 10 cr hrs.

793 Individual Studies U G 2, 3 or 5

Problems in various phases of textiles and clothing chosen for individual study.

Su, Au, Wi, Sp Qtrs. 1 or more conf. Prereq: Written permission of instructor. Not open to students with maximum allowable credit for 793.03 or 793.04 or Home Ec 793.03 or 793.04. Repeatable to a maximum of 15 cr hrs.

797 Interdepartmental Seminar U G 2-4

See Interdepartmental Seminars.

Not open to students with maximum allowable credit for Home Ec 797. Repeatable to a maximum of 6 cr hrs.

870† Clothing: Fashion G 5

Theories underlying fashion change, and an analysis of fashion as a social and economic force. Dickey.

Su, Sp Qtrs. 3 cl plus independent study. Prereq: 672 (or Home Ec 672) and 25 cr hrs in sociol, psych, econ, or bus admin. Not open to students with credit for Home Ec 870.

872 Seminar in Textiles and Clothing G 3 or 5

a—Economics of Textiles. Wi Qtr. Lapitsky.

b—Social-Psychological Aspect of Clothing. Su, Sp Qtrs. Dickey.

c—Educational Trends in Textiles and Clothing. Au Qtr. Meacham.

d—Historic Textiles. Sp Qtr. Dickey, Lapitsky, Meacham, and Millican.

2-3 cl. Prereq: 671 (or Home Ec 671) or 672 (or Home Ec 672) or 870 (or Home Ec 870) or H Ec Edu 842 (or Home Ec 842), depending on emphasis of topic and written permission of instructor. Not open to students with maximum allowable credit for 872 or Home Ec 872. Repeatable to a maximum of 15 cr hrs.

877 Application of Textiles & Clothing Theories and Concepts G 3

An introduction to the literature in textiles and clothing with emphasis on evaluation of research and identification of a research problem. Dickey.

Au Qtr. 2 cl. Prereq or concur: Communic 701.01 and H Ec Edu 840 or equiv with written permission of instructor.

894 Group Studies G 2, 3 or 5

Selected topics in textiles and clothing.

Prereq: Open to students who meet dept's stated prereqs. Not open to students with maximum allowable credit for 894.03 or 894.04 or Home Ec 894.03 or 894.04. Repeatable to a maximum of 10 cr hrs.

899 Interdepartmental Seminar G 1-5

See Interdepartmental Seminars.

Au, Wi, Sp Qtrs. Not open to students with maximum allowable credit for Home Ec 899.

993 Individual Studies G 2, 3 or 5

Problems in various phases of textiles and clothing chosen for individual study.

Su, Au, Wi, Sp Qtrs. 1 or more conf. Prereq: Written permission of instructor. Not open to students with maximum allowable credit for 993.03 or 993.04 or Home Ec 993.03 or 993.04. Repeatable to a maximum of 15 cr hrs.

998 Research: Thesis G Arr

Research for master's thesis.

Su, Au, Wi, Sp Qtrs.

999 Research: Dissertation G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Theatre

Office: 1089 Drake Union, 1849 Cannon Drive, 422-5821

100 Introduction to Theatre U 5

A study of the theatre with emphasis upon its cultural and social influences in our society.

Su, Au, Wi, Sp Qtrs. Not open to students with credit for 165.

101 Principles and Techniques of the Theatre Arts I U 3

Basic principles and elementary techniques of theatrical performance.

Au Qtr. 1 2-hr cl, 2 2-hr labs. Prereq: Admission to theatre BFA program. Repeatable to a maximum of 6 cr hrs.

102 Principles and Techniques of the Theatre Arts II U 3

Continuation of 101.

Wi Qtr. 1 2-hr cl, 2 2-hr labs. Prereq: 101.

103 Principles and Techniques of the Theatre Arts III U 3

Continuation of 102.

Sp Qtr. 1 2-hr cl, 2 2-hr labs. Prereq: 102.

200 Fundamentals of Theatre Practice U 3

Nature of modern theatre art and principles of play production; survey of contemporary theatre and career opportunities.

Su, Au, Wi, Sp Qtrs. 3 cl. Not open to students with credit for 275.

205 Theatre Practicum I U 1

Provides experience in theatrical performance and production activities.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 6 cr hrs including credit in 265.

205.01 Stage Direction/Management**205.02 Technical Production/Lighting****205.04 Stage Design****205.05 Costuming/Makeup****205.08 Acting****205.09 Theatre Management****205.10 General****220 Technical Production I U 5**

Basic aspects of scenery construction, rigging, stage lighting, and sound effects, and their integration.

Su, Au, Wi, Sp Qtrs. Prereq: 200. Not open to students with credit for 270.

271 Great Ages of the Theatre U 5

Concepts and characteristics of the great periods of the theatre of the western world.
Su, Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 285.

280 Acting Fundamentals I U 3

The actor's resources and methods, basic body movement, and vocal interpretation.
Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 200.

281 Acting Fundamentals II U 3

Continuation of 280.
Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 280 or equiv. Not open to students with credit for 365.

284 Stage Movement I U 2

The LeCoq technique of movement training: physical conditioning, kinesthetic awareness, stage combat, mask technique, improvisations and scene work; specifically designed for beginning professional students.

Au, Wi, Sp Qtrs. Prereq: Admission to theatre BFA program. Repeatable to a maximum of 6 cr hrs.

286 Stage Speech I U 2

Basic training in stage speech for acting and directing.

Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 6 cr hrs.

310 Stage Directing I U 5

Techniques of play analysis, interpretation, composition, movement, rhythm and tempo; their integration in stage direction.

Su, Au, Wi Qtrs. 3 2-hr cl. Prereq: 280. Not open to students with credit for 365.

320 Stage Management U 3

Research, discussion, and application of the principles of organizing and managing stage productions; experience in actual performance.

Au Qtr. 2 cl, 1 lab hr arr. Prereq: 220 or equiv.

325 Stage Lighting I U 3

Study of electrical, mechanical, and electronic elements of lighting for the stage as prerequisite for the study of stage lighting design.

Au, Sp Qtrs. 3 cl. Prereq: 220 or equiv. Not open to students with credit for 530.

341 Stage Design Drafting U 3

Principles of mechanical drawing and scale model building as applied to the problems of theatrical scene design.

Au Qtr. 2 2-hr labs. Prereq: 220. Not open to students with credit for 340 or 540.

350 Introduction to Stage Makeup U 2

Practical application of the theories and techniques of theatrical makeup.

Su, Au, Wi, Sp Qtrs. 2 cl. Prereq: 200 or permission of instructor.

351 Stage Costuming I U 3

Basic principles and techniques of stage costume design and construction.

Au Qtr. 3 cl, 4 lab hrs arr. Prereq: 200. Not open to students with credit for 366.

380 Intermediate Acting I U 3

Au, Wi Qtrs. 2 2-hr cl. Prereq: 281 or equiv and written permission of instructor.

381 Intermediate Acting II U 3

Continuation of 380.

Wi Qtr. 2 2-hr cl. Prereq: 380 and written permission of instructor.

382 Intermediate Acting III U 3

Continuation of 381. D'Ambrosia.

Sp Qtr. 2 2-hr cl. Prereq: 381 and written permission of instructor.

405 Theatre Practicum II U 1-3

Provides experience in theatrical performance and production activities at an intermediate level.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 18 cr hrs in any combination of decimal subdivisions.

- 405.01 Stage Direction/Management**
- 405.02 Technical Production/Lighting**
- 405.04 Stage Design**
- 405.05 Costuming/Makeup**
- 405.08 Acting**
- 405.09 Theatre Management**
- 405.10 General**

494 Group Studies U 1-3

Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 9 cr hrs.

501 Children's Theatre: Production and Direction U G 5

Selection, production, and direction of plays for children.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 220. Cross-listed in Ed Hum as 630. Not open to students with credit for 565 or Ed-Hums 630.

510 Stage Directing II U G 5

Analysis of staging problems in scenes from selected modern dramas; techniques for staging.

Wi Qtr. 3 2-hr cl. Prereq: 310.

520 Technical Production II U G 3

Staging methods in non-typical scenic styles and periods for dramatic and musical productions.

Wi Qtr. 3 cl. Prereq: 320 and 341.

531 Theatre Repertory I U G 3

Survey of representative world drama from classical Greece to the 17th century.

Su, Au Qtrs. 3 cl. Not open to students with credit for 571.

532 Theatre Repertory II U G 3

Survey of representative western drama from the 17th century through the rise of realism.

Wi Qtr. 3 cl. Not open to students with credit for 572.

533 Theatre Repertory III U G 3

Survey of representative western drama since the rise of realism.

Sp Qtr. 3 cl. Not open to students with credit for 573.

545 Introduction to Stage Design U G 3

Fundamental principles and techniques of stage design; experience in designing projects.

Wi Qtr. 3 cl. Prereq: 341. Not open to students with credit for 540.

601 Theatre Management U G 3

Consideration of principles of management as applied to theatre production, preparation, and performance.

Au Qtr. Prereq: 320 or permission of instructor.

610 Advanced Stage Directing U G 3

Principles, techniques, and practice of advanced direction and integration of technical elements in theatrical production.

Sp Qtr. 3 2-hr cl. Prereq: 510 or permission of instructor. Not open to students with credit for 865.

620 Technical Production III U G 3

Consideration and application of methods and materials for construction of properties and special effects for the stage.

Sp Qtr. Prereq: 520 or equiv.

621 Advanced Theatre Graphics U G 3

Technical graphics and drafting procedures for production of scenery shop drawings and lighting layouts; students may serve as technical draftsmen for departmental productions.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: 325 and 341; or Dance 533. Repeatable to a maximum of 9 credit hours.

625 Stage Lighting II U G 3

Study of light as a design medium for the stage; preparation of lighting designs for various stages.

Wi Qtr. Prereq: 325 or equiv.

626 Theatre Sound Techniques U G 2

A survey of equipment and operational techniques used to provide sound support for theatrical productions.

Au Qtr. Prereq: 625.

640 Decorative Arts for Theatre U G 3

Condensed survey of decorative arts, ancient to modern; emphasis on interiors, furniture, textiles, and colors and their adaptation to stage use.

Su, Wi Qtrs. Prereq: 545 or equiv.

641 Stage Design Media U G 3

Techniques of rendering for stage design in various media.

Au Qtr. Prereq: Permission of instructor.

642 Scene Painting and Watercolor U G 3

Techniques used in scene painting and watercolor; mixing and matching colors, rendering texture and form, enlarging painter's elevations; types of paints used in scene painting.

Sp Qtr. Prereq: 641. Repeatable to a maximum of 6 cr hrs.

643 Intermediate Stage Design I U G 3

Investigation of 20th Century design and rendering techniques and their application to the stage; experience in researching and designing projects.

Au Qtr. 1 2-hr cl. Prereq: 325 and 545 or equiv with written permission of instructor.

644 Intermediate Stage Design II U G 3

Presentation of the design concept in three-dimensional media; emphasis on designing for non-proscenium production.

Wi Qtr. 1 2-hr cl. Prereq: 325, 545, and 643 or equiv with written permission of instructor.

645 Modern Stage Design Styles U G 3

Study of the application of major stylistic trends in scenic design to modern theatrical productions through lecture-discussion and specific design projects.

Sp Qtr. Arr. Prereq: 545 and 644 or equiv with written permission of instructor.

650 Advanced Stage Makeup U G 2

Advanced theories and techniques of theatrical makeup with emphasis on problems in modern theatre styles.

Su, Wi, Sp Qtrs. 2 cl. Prereq: 350.

651 Stage Costuming II U G 3

Principles and methods of pattern drafting, cutting, draping, and construction of stage costume.

Wi Qtr. Prereq: 351 or equiv.

656 History of Costuming for the Stage I U G 3

Evolution of fashion from Ancient Greece to 1650 and application to stage costume design.

Au Qtr. 2 2-hr cl. Prereq: 351 or equiv with written permission of instructor. Not open to students with credit for 655.

657 History of Costuming for the Stage II U G 3

Evolution of fashion from 1650 to the present and application to stage costume design.

Wi Qtr. 2 2-hr cl. Prereq: 656. Not open to students with credit for 655.

660 Playwriting I U G 5

Laboratory course in playwriting; student plays developed from original idea through scenario into final production script with limited production of selected works.

Wi Qtr. Prereq: Basic knowledge of dramatic literature and permission of instructor. Repeatable to a maximum of 10 cr hrs including credit for English 667.

671 History of the Theatre I U G 3

Greek, Roman, Medieval, and Commedia dell'arte theatre.

Au Qtr. 3 cl.

672 History of the Theatre II U G 3

Renaissance, Elizabethan, and Restoration theatre.

Su, Wi Qtrs. 3 cl.

673 History of the Theatre III U G 3

18th and 19th century Continental, English, and American theatre.

Sp Qtr. 3 cl.

674 History of the Theatre IV U G 3

20th Century Continental, English, and American theatre.

Au Qtr.

675 American Theatre History U G 5

Development of the American theatre from 1752 to the present; consideration of principal actors, managers, playwrights, directors, and designers.

Wi Qtr. 5 cl. Prereq: Permission of instructor.

676† Oriental Theatre U G 3

A survey of the major dramatic and theatrical forms of China, India, and Japan, with emphasis on the relationship between the written word and performance.

Sp Qtr. Prereq: Permission of instructor.

680 Acting in Period Drama I U G 3

Textual and character analysis, vocal and physical skills requisite for the acting of selected period drama.

Wi Qtr. 2 2-hr cl. Prereq: 381 or equiv. Not open to students with credit for 605.

681 Acting in Period Drama II U G 3

Continuation of 680.

Sp Qtr. Prereq: 680.

684 Dance Fundamentals for Theatre U G 2

Basic techniques of movement for theatre dance. McCray.

Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: Written permission of instructor. Repeatable to a maximum of 6 cr hrs.

688 Stage Movement II U G 2

The LeCoq technique of movement training: physical conditioning, kinesthetic awareness, stage combat, mask technique, improvisations and scene work.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs.

693 Individual Studies U G 1-5

Conference, library, and laboratory work.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

694 Group Studies U G 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

698† Study Tour U G 3-15

Sp Qtr. Prereq: Permission of instructor.

711 Comparative Study in Film and Theatre Directing U G 5

An analytical and descriptive study of the nature and differences of film and theatre directing.

Au Qtr. 2 2-hr cl. Prereq: 310, 510 and Photog 505 and 551.

745 Advanced Scene Design U G 3

Study of historic and modern scene design and application to modern theatrical stage practices; experience in executing creative and interpretive project designs.

Su, Au, Wi, Sp Qtrs. Prereq: 645 or equiv and permission of instructor. Repeatable to a maximum of 9 cr hrs.

751 Stage Costuming Accessories U G 3

Methods of design and construction for costume foundations (corsets, hoops, padding, etc.), headgear, hats, footwear, jewelry, and armor.

Sp Qtr. Prereq: 651 or equiv.

755 Stage Costume Design U G 3

Theory, methods, and materials of costume design with emphasis on design problems for the stage.

Sp Qtr. 3 cl. Prereq: 651 and 655 or equiv. Repeatable to a maximum of 9 cr hrs.

760 Theatre Styles U G 3

Study and analysis of significant styles of production in the theatre.

Au Qtr. 3 cl. Prereq: 510 or permission of instructor. Not open to students with credit for 770.

761 Theatrical Criticism U G 5

Critical theories from the Greek to the modern period with particular reference to the influence of the theorists, church, state, and press.

Au Qtr. 5 cl. Prereq: Grad standing or permission of instructor. Not open to students with credit for 875.

771†* Greek and Roman Theatre U G 3

Advanced study and research in Greek and Roman theatre and drama.

Au Qtr. Prereq: 671 or equiv.

772†* European Renaissance Theatre U G 3

Advanced study and research in Renaissance theatre and drama on the continent.

Wi Qtr. Prereq: 671 and 672 or equivs.

773†* English Renaissance Theatre U G 3

Examination of theatre history and drama of 16th- and 17th-century England up to 1642.

Sp Qtr. Prereq: 671, 672, and 673, or equivs.

774* Restoration and 18th-Century Theatre U G 3

Advanced study and research in English theatre and drama of the Restoration and 18th century.

Au Qtr. Prereq: 671, 672, and 673, or equivs.

775* European Baroque Theatre U G 3

Advanced study and research in Baroque theatre and drama in Europe.

Wi Qtr. Prereq: 671, 672, and 673 or equivs.

776* Nineteenth Century European Theatre U G 3

Analysis of the rise of naturalism and realism in the drama and theatre of England and the continent during the 19th century.

Sp Qtr. Prereq: 671, 672, and 673 or equivs.

780 Advanced Acting Theory U G 3

A study of the major theories of the art of acting and their application.

Au Qtr. Prereq: Permission of instructor.

H783 Honors Course U 3-5

An individual program of study, with conferences, reports, and honors thesis.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing; a grade of A in at least half of the theatre courses taken and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs.

786 Stage Speech II U G 2

Advanced study of voice, phonetics; development of special vocal techniques required for stage performance.

Au, Wi, Sp Qtrs. 3 2-hr cl. Repeatable to a maximum of 6 cr hrs.

789 Advanced Acting Studio U G 2

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

800 Advanced Studies in Theatre G 3 or 5

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 40 cr hrs in any combination of decimal subdivisions including cr hrs earned in 880.

800.01 Stage Direction/Management**800.02 Technical Production/Lighting****800.03 Dramatic Literature****800.04 Stage Design****800.05 Costuming/Makeup****800.06 Criticism, Theory, Playwriting****800.07 History****800.08 Acting****800.09 Theatre Management**

801 Research Methods G 5

Methods and tools of research in all areas of theatre.
Au Qtr. 2 2-hr cl, lab arr. Not open to students with credit for 870.

802 Seminars in Theatre G 2-5

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 40 cr hrs in any combination of decimal subdivisions including cr hrs earned in 970.

802.01 Stage Direction/Management**802.02 Technical Production/Lighting****802.03 Dramatic Literature****802.04 Stage Design****802.05 Costuming/Makeup****802.06 Criticism, Theory, Playwriting****802.07 History****802.08 Acting****802.09 Theatre Management****805 Graduate Theatre Practicum G 1-5**

Individual theatrical performance and production activities at an advanced level under faculty supervision.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of adviser. Repeatable to a maximum of 40 cr hrs in any combination of decimal subdivisions including cr hrs earned in 880.

805.01 Stage Direction/Management**805.02 Technical Production/Lighting****805.04 Stage Design****805.05 Costuming/Makeup****805.08 Acting****805.09 Theatre Management****810 Directing Period Drama G 3**

Advanced problems in directing premodern drama.
Wi Qtr. Prereq: 610, 671, 672, 673, and 760 or equiv.

811 Directing in Modern Theatre Styles G 3

Advanced problems in directing modern nonrealistic styles of drama.

Sp Qtr. Prereq: 610, 674, and 760 or equivs.

830 Comparative Comedy G 3

Variation in the form of the comic genre from Greek farce to contemporary comedy.

Au Qtr. 3 cl. Prereq: 531, 532, 533, and 860 or equivs. Not open to students with credit for 685.

831 Comparative Tragedy G 3

Variations in the form of the tragic genre from Aeschylus to the present.

Wi Qtr. 3 cl. Prereq: 531, 532, 533, and 860 or equivs. Not open to students with credit for 686.

832 Comparative Melodrama G 3

Variations in the melodramatic form from Euripides to the present.

Sp Qtr. 3 cl. Prereq: 531, 532, 533, and 860 or equivs.

833 Seminal Modern Drama G 5

Consideration of modern dramatists who have most influenced the content and the technique of contemporary drama.

Wi Qtr. 5 cl. Not open to students with credit for 871.

834 Contemporary Drama G 5

Consideration of the most significant post-World War II dramatists.

Sp Qtr. 5 cl.

860 Classical Critical Theories of the Theatre G 5

Detailed analysis of the classical sources of critical theory of the theatre.

Wi Qtr. 5 cl. Prereq: 761 or permission of instructor. Not open to students with credit for 876.

861 Modern Critical Theories of the Theatre G 5

Concentrated analysis and discussion of recent critical theories of the theatre, especially since 1945; examination of pivotal books in the field.

Sp Qtr. 5 cl. Prereq: 761 or written permission of instructor. Not open to students with credit for 877.

893 Individual Studies G 3-5

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

990† International Theatre Research G 3-15

Individual research in drama and theatre on campus and abroad.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

998 Research in Theatre: Thesis G 1-6

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 6 cr hrs.

999 Research in Theatre: Dissertation G Arr

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

University College

Office: 152 West Hall, 1050 Carmack Road, 422-6344

100 University Survey U 1

Academic requirements and organization of the University, nature of scholarly study, characteristics of academically successful students, study techniques, selection of degree programs, academic coping skills.

Su, Au, Wi, Sp Qtrs. 2 1-hr cl. Prereq: Enrollment in University College. Students schedule a section of University Survey corresponding to their curricular academic program.

100.01 Administrative Science Survey**100.03 Agriculture Survey****100.05 Allied Medical Professions Survey****100.07 Architecture Survey****100.09 Art Survey****100.11 Arts and Sciences Survey****100.13 Dentistry Survey****100.15 Dental Hygiene Survey****100.17 Education Survey****100.19 Engineering Survey****100.21 General Baccalaureate Survey****100.23 Home Economics Survey****100.25 Medicine Survey****100.27 Music Survey****100.28 Natural Resources Survey****100.29 Nursing Survey****100.31 Optometry Survey****100.33 Pharmacy Survey****100.35 Social Work Survey****100.37 Veterinary Medicine Survey**

Veterinary Anatomy

Office: 102-A Sisson Hall, 1900 Coffey Road, 422-2091

100 Veterinary Anatomy U 5

Lectures and demonstrations on specimens from the various anatomical systems of domestic animals.

Au, Wi Qtrs. 5 cl. Prereq: Zoology 201 or equiv. Not open to vet med students.

601 Veterinary Endocrinology P G 3-5

Special consideration is given to correlation of endocrine control of cellular metabolism. Venzke.

Su, Au, Sp Qtrs. 3 cl, 4 lab hrs. Prereq: VM Coll 604 or equiv.

693 Individual Studies P G 2-5

Training in laboratory investigation of special problems. Venzke, Diesem, and deWet.

Su, Au, Wi, Sp Qtrs. 1 cl, 6-15 lab hrs. Prereq: VM Coll 530 and 531. Repeatable to a maximum of 18 cr hrs.

700 Comparative Functional Neuroanatomy P G 6

A detailed comparative gross and microscopic study of the external and internal structure of the central nervous systems and sense and effector organs and their organization into functional divisions in infraprimates (domestic mammals and fowl) and primates. deWet.

Su, Au, Wi, Sp Qtrs. 3 cl, 6 lab hrs. Prereq: VM Coll 603, Anatomy 704 or equiv.

710 Anatomy of Avian and Sub-Primate Laboratory Animals P G 3

A comparative anatomical study of the various systems of the avian species and the common sub-primate mammals used in laboratory investigation. Diesem.

Su, Au Qtrs. 2 cl, 1 3-hr lab. Prereq: VM Coll 520 and 521 or equiv course work in anatomy; written permission of instructor.

794 Group Studies in Veterinary Anatomy P G 2-6

Provides flexibility in the veterinary professional program by offering selected topics in veterinary anatomy.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs for prof cr and 2-8 cr hrs for grad cr.

794.01 Equine Surgical Anatomy

Emphasis on blood and nerve supply to common surgical sites; special emphasis involving methods of anesthetizing selected surgical areas and areas useful in diagnostic procedures for lameness. Diesem.

794.02 Ophthalmic Anatomy

The comparative anatomy, histology, neuroanatomy, and embryology of the orbit and its contents in mammals, birds, and reptiles. Diesem.

794.10 Surgical Anatomy of the Dog and Cat P G 3

Surgical and diagnostic anatomy of the cat and dog with emphasis on topographical anatomy, the palpation of living subjects, and the dissection of fresh and preserved specimens. Horowitz, Rankin and Henry.

Au, Wi, Sp Qtrs. 1 cl, 2 2-hr lab. Prereq: VM Coll 520 and 521.

801 Anatomical Techniques G 2-5

Theory and practice of macroscopic and microscopic methods, including specimen preparation for

dissection, fixing, imbedding, sectioning, mounting, and staining of animal tissue. Diesem, Venzke, and deWet.

Su Qtr. 1 cl, 6-15 lab hrs. Prereq: VM Coll 521, 531 or equiv and permission of instructor. Repeatable to a maximum of 15 cr hrs.

999 Research in Veterinary Anatomy G Arr

Research for thesis or dissertation purposes only. Su, Au, Wi, Sp Qtrs.

Veterinary Clinical Sciences

Office: 1010 Veterinary Hospital, 1935 Coffey Road, 422-7105

710 Applied Veterinary Medicine Options P 2-4

A series of clinical studies offered as electives for 4th year Vet Med students to arrange into an elective program in conjunction with a faculty adviser.

Su, Au, Wi, Sp Qtrs. Prereq: Vet Med 4th yr standing. Repeatable to a maximum of 8 cr hrs.

710.01 Receiving/Out-Patient Clinic

Clinical instruction designed to improve the student's proficiency in client relations, diagnosis, treatment, and prevention of diseases in out-patients.

710.02 Companion Animal Medicine

The application to companion animal patients of the latest knowledge concerning diagnosis, treatment, and prevention of diseases.

710.03 Small Animal Surgery

The application of principles of surgery to treatment of diseases of companion animals.

710.04 Large Animal Medicine

Clinical instruction and experience in the diagnosis, treatment, and prevention of diseases of horses, cattle, swine, and sheep.

710.05 Large Animal Surgery

The application of principles of surgery to treatment of diseases of farm and other large species of animals.

710.06 Ambulatory Clinic

The application of the principles of management, diagnosis, treatment, and prevention of disease in farm and exotic animals in the environment in which they are produced.

710.07 Veterinary Clinical Radiology

Diagnostic and therapeutic techniques that will broaden the student's knowledge in clinical diagnosis and treatment.

710.09 Clinical Anesthesiology

The application of principles of anesthesiology. 4-8 clinic hrs per day with 24 hr patient care responsibility.

720 Advanced Canine and Feline Medicine I P G 3

Special consideration will be given pathophysiology, diagnoses, and therapy of diseases with reference to nutrition and pediatrics. Donovan.

Su, Au, Wi, Sp Qtrs. Prereq: Vet Med 3rd or 4th yr standing or permission of instructor. Not open to students with credit for 794.01.

721 Advanced Canine and Feline Medicine II P G 3

A continuation of 720 with special reference made to infectious diseases, geriatrics, infertility and diseases of the urinary system. Donovan.

Su, Au, Wi, Sp Qtrs. Prereq: Vet Med 3rd or 4th yr standing or permission of instructor. Not open to students with credit for 794.01.

723 Clinical Dermatology Seminar P G 1

Dermatological problems will be discussed and clinical cases will be used to illustrate different diseases. Diagnosis and treatment will be emphasized. Capen.

Su, Au, Wi, Sp Qtrs. Prereq: Vet Med 3rd or 4th yr standing or permission of instructor. Not open to students with credit for 794.22.

725 Canine and Feline Dentistry P G 1

Lectures, demonstrations, and laboratories covering prophylactic care, and extraction of teeth, endodontic and prosthodontic therapy. Donovan.

Su, Au, Wi Sp Qtrs. Prereq: Vet Med 3rd or 4th yr standing or permission of instructor. Not open to students with credit for 794.01.

727 Diseases of Pet Birds, Captive Reptiles and Aquarium Fish P G 2

Covers aspects of pet bird practice including restraint, nutrition, disease problems and therapy, radiology, anesthesia and surgery of budgerigars and other species of pet, caged birds. Management, nutrition and common disease problems of animal species such as snakes, turtles, lizards, and aquarium fish will be discussed. Laboratories utilizing live animals to teach handling and techniques of these species will be incorporated into the course. Capen.

Su, Au, Wi, Sp Qtrs. 2 cl. Prereq: Vet Med 3rd or 4th yr standing or written permission of instructor. Not open to students with credit for 794.06.

730 Surgical Diseases of Horses P G 3

Current concepts of diagnosis and treatment of diseases of the horse with emphasis on lameness and surgery. Gabel.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Vet Med 3rd or 4th yr standing or written permission of instructor. Not open to students with credit for 794.03.

731 Medical Diseases of the Horse P G 3

Lectures and discussions of medical diseases of the horse with emphasis on common infectious and non-infectious diseases. McAllister.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Vet Med 3rd yr standing.

732 Diseases of Cattle P G 3

Current concepts of diagnosis, treatment, and prevention of important diseases; presented in conferences and demonstrations. Gardner.

Su, Au, Wi, Sp Qtrs. Prereq: Vet Med 3rd or 4th yr standing or permission of instructor. Not open to students with credit for 794.04.

734 Swine Medicine and Surgery P G 3

Current concepts of diagnosis, treatment, and prevention of important diseases; presented in conferences and demonstrations. Andreas.

Su, Au, Wi, Sp Qtrs. Prereq: Vet Med 3rd or 4th yr standing or written permission of instructor. Not open to students with credit for 794.05.

736 Diseases of Sheep P G 2

Current concepts of diagnosis, treatment, and prevention of diseases; presented in conference and demonstrations. Donham.

Su, Au, Wi, Sp Qtrs. Prereq: Vet Med 3rd or 4th yr

standing or permission of instructor. Not open to students with credit for 794.04.

740 Veterinary Health Management Programs for Food Producing Animals P G 2

Current concepts of herd health programming, development, and analysis of programs for optimum control of disease and economy of food production. Heider.

Su, Au, Wi, Sp Qtrs. Prereq: Vet Med 3rd or 4th yr standing or permission of instructor. Not open to students with credit for 794.04.

750 Veterinary Practice and Hospital Management P 3

Basic principles of hospital and practice management including insurance, partnerships, corporations, accounting, taxes, employees, and general management procedures. Whiteus.

Su, Au, Wi, Sp Qtrs. Prereq: Vet Med 3rd or 4th yr standing.

760 Comparative Ophthalmology P G 3

The comprehensive consideration of comparative ophthalmology in which differences and similarities of eyes in domestic animals will be presented. Wyman.

Sp Qtr. Prereq: Permission of instructor.

761 Advanced Neurology P G 2

Advanced study of diagnosis, treatment, and prevention of diseases affecting the nervous system. Chrisman.

Su, Au, Wi, Sp Qtrs. Prereq: Vet Med 3rd or 4th yr standing or permission of instructor. Not open to students with credit for 794.16.

762 Clinical Veterinary Ophthalmology P G 2

Discussion of disease recognition, pathophysiology, diagnosis, and therapy, both medical and surgical. Wyman.

Su, Au, Wi, Sp Qtrs. Prereq: Vet Med 3rd or 4th yr standing or permission of instructor. Not open to students with credit for 794.12.

764 Advanced Cardiology P G 2

Advanced study of the diagnosis, treatment, and prevention of diseases of the cardiovascular system.

Su, Au, Wi, Sp Qtrs. Prereq: Vet Med 3rd or 4th yr standing or permission of instructor. Not open to students with credit for 794.14.

766 Clinical Hematology P G 2

Discussion of practical approach to diagnosis and management of hemolymphatic disorders. Interpretation of laboratory determinations as related to pathophysiology of disease processes.

Su, Au, Wi, Sp Qtrs. Prereq: Vet Med 3rd or 4th yr standing or permission of instructor. Not open to students with credit for 794.21.

770 Orthopedic Conference P G 1

Practical application of advanced surgical techniques for treatment of diseases of the skeletal system requiring surgery. Hohn.

Su, Au, Wi, Sp Qtrs. Prereq: Vet Med 3rd or 4th yr standing or permission of instructor. Not open to students with credit for 794.18.

777 Small Animal Preparation and Use in Biological Research U G 3

Principles of and practical experience in animal handling, in anesthesia and surgery of small rodents under routine laboratory conditions.

Su Qtr. Prereq: Advanced undergrad or grad standing in biological sciences or permission of instructor.

780 Diagnostic Contrast Radiology P G 1-8

Routine contrast studies of the digestive, urinary and nervous systems, with emphasis on techniques and contrast materials. Small groups of students will perform each of the procedures. Burt.

Su, Au, Wi, Sp Qtrs. Prereq: Vet Med 3rd or 4th yr standing or written permission of instructor.

790 Advanced Study of Diseases of the Reproductive System P G 2

A study of diagnosis, treatment, and prevention of diseases of the reproductive system of domestic animals. Threlfall.

Su, Au, Wi, Sp Qtrs. Prereq: Vet Med 3rd or 4th yr standing or permission of instructor. Not open to students with credit for 794.13.

791 Reproduction Laboratory, Equine P G 2

A laboratory course devoted to physical examination of the reproductive system and artificial insemination. Wi, Sp Qtrs. 8 lab hrs. Prereq: 4th year standing in Vet Med.

792 Advanced Study of Diseases of the Reproductive System—Laboratory P G 1

A laboratory for the application of diagnostic and therapeutic techniques for diseases of the reproductive system of domestic animals. Threlfall.

Su, Au, Wi, Sp Qtrs. Prereq: Vet Med 3rd or 4th yr standing or permission of instructor. Not open to students with credit for 794.13.

793 Individual Studies P G 2-8

A supervised critical investigation of some aspects of animal disease about which there is a mutual curiosity on the part of both the student and faculty.

Su, Au, Wi, Sp Qtrs. Prereq: Vet Med 4th yr standing, adequate clinical training and permission of instructor. Repeatable to a maximum of 20 cr hrs.

794 Group Studies in Veterinary Clinical Sciences P G 1-8

Su, Au, Wi, Sp Qtrs. Prereq: Vet Med 3rd or 4th yr standing or written permission of instructor. Repeatable to a maximum of 30 cr hrs.

794.02 Advanced Canine and Feline General Surgery

Designed to increase the student's knowledge and skills necessary for the diagnosis and surgical treatment of disease of dogs and cats. Wilson.

794.07 Laboratory Medicine

Assignment of patients for in-depth independent study of diagnosis and disease course with emphasis on the laboratory parameters, their selection and interpretation. Kociba.

794.08 Clinical Microbiology

Assignment of patients for in-depth study of diagnosis and course of disease with emphasis on selection and interpretation of laboratory parameters. Kowalski.

794.10 Diagnostic Radiology

Emphasis on advanced radiographic interpretation, stressing various radiologic signs of normalcy and disease. Burt.

794.11 Advanced Nuclear Medicine

Application of radioisotopes in diagnostic or therapeutic procedures. Burt.

794.15 Advanced Thoracic Surgery

Consideration of advanced surgical techniques for treatment of diseases of the thorax requiring surgery. Rudy.

794.17 Advanced Topics in Neurosurgery and Orthopedic Surgery in Companion Animals

Practical application of advanced surgical techniques for treatment of diseases of the musculoskeletal system requiring surgery. Rudy.

794.19 Advanced Topics in Surgery of Equine

Practical application of advanced surgical techniques for treatment of diseases of horses.

794.20 Advanced Equine Lameness

Study of the methods used for diagnosis and treatment of diseases causing lameness in horses; includes radiographic and surgical techniques. Gabel.

794.23 Advanced Gastroenterology

Study of diagnosis, treatment, and prevention of diseases of the gastrointestinal system.

794.24 Advanced Urology

Study of diagnosis, treatment, and prevention of disease of the urinary system. Donovan.

794.25 Advanced Study of Diseases of the Respiratory System

Study of diagnosis, treatment, and prevention of diseases of the respiratory system. Muir.

794.26 Advanced Study of Diseases of the Endocrine System and Metabolic Diseases

Study of diagnosis, treatment, and prevention of diseases of the endocrine system and metabolic diseases. Donovan.

794.28 Physiological Basis of Clinical Dietetics

Composition and energy content of feedstuffs, respiratory quotient, calometric measurement, BMR and effect of age, species, sex, body weight, body size, and specific dynamic action of feedstuffs. Ray.

794.29 Nutrient Requirements and Modern Nutritional Practice in Domestic Animals

Nutritional requirements and practices in the dog, cat, equine, dairy cow, beef cow, swine, poultry, and laboratory and exotic animals. Murdick.

794.30 General Medical Considerations in Clinical Dietetics

Calories, nutrition and infection, inherited metabolic deficiencies, food intolerances among species, parenteral nutrition in surgical and medical diseases, the role of prescription diets in the prevention and treatment of disease. Murdick.

794.33 Advanced Topics in Surgery of Food Animals P G 3

Topics dealing with disease of food animals requiring surgery. Clinical case material and laboratories will be used to illustrate the topics. Hoffsis.

798 Residency in Veterinary Clinical Sciences P 18

Su, Au, Wi, Sp Qtrs. 12 months full-time, beginning July 1. Prereq: Appointment as Resident, University Veterinary Hospital. Repeatable to a maximum of 216 cr hrs.

798.01 Residency in Veterinary Surgery

Rotation through general surgery and sub-specialties; rounds, conferences, and seminars.

798.02 Residency in Veterinary Radiology

General diagnostic radiology, radiation therapy, nuclear medicine, special diagnostic and therapeutic procedures, conferences, and seminars.

798.03 Residency in Veterinary Ophthalmology
Rotation through medicine and surgery of the eye and adnexa of all animal species; rounds, seminars, conferences, and didactic programs.

798.04 Residency in Veterinary Medicine
Rotation through general medicine and medical sub-specialties; rounds, conferences, seminars, and didactic programs.

850 Seminar in Veterinary Clinical Sciences G 1

Murdick.

Su, Au, Wi, Sp Qtrs. 1 hr per wk in seminar. Prereq: The degree Doctor of Veterinary Medicine. Repeatable to a maximum of 10 cr hrs.

999 Research in Veterinary Clinical Sciences G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Veterinary Medicine, College of

Office: 101A Sisson Hall, 1900 Coffey Road, 422-1171

510 A Holistic Concept of Animal Health P 4

Introductory problems in the study of animal health including expected behavior, homeostasis, epidemiology, genetics and therapeutics presented in respect to biological variation and measurement.

Au Qtr. 2 lecture/discussion, 1 lab, 1 conf. Prereq: Vet Med 1st yr standing.

520 Comparative Topographic Anatomy P 6

The dynamic comparative study of the form, relationship, and mechanical functioning of component body parts as they relate to modern veterinary medicine. Diesem.

Au Qtr. Prereq: Vet Med 1st yr standing.

521 Comparative Topographic Anatomy P 6

Continuation of 520. Diesem.

Wi Qtr. Prereq: Vet Med 1st yr standing.

530 Comparative Structure and Function of Tissues P 5

The interdisciplinary study of tissue structure and development of the four tissue classes, involving concepts of embryology, histology, endocrinology, and physiology. Venzke.

Au Qtr. Prereq: Vet Med 1st yr standing.

531 Comparative Structure and Function of Tissues P 3

Continuation of 530. Venzke.

Wi Qtr. Prereq: Vet Med 1st yr standing.

540 Comparative Cellular Biology P 4

Introduction to principles of structure, function, and malfunction at the cellular level, including enzymes, energetics, metabolism, and growth. Nagode.

Au Qtr. Prereq: Vet Med 1st yr standing.

550 Comparative Biology of Disease P 11

An interdisciplinary study of the interactions between

disease producing agents, body systems, tissues, cells, subcellular units, and selected drugs. Davis.
Wi Qtr. Prereq: Vet Med 1st yr standing.

560 Basic Elements of Veterinary Medical Practice and Hospital Orientation I P 3

The identification of disease via history, physical, and laboratory examinations and special diagnostic techniques and orientation in therapeutic procedures in a hospital environment. Milne.

Au Qtr. Prereq: Vet Med 1st yr standing.

561 Basic Elements of Veterinary Medical Practice and Hospital Orientation II P 3

Continuation of 560. Milne.

Wi Qtr. Prereq: Vet Med 1st yr standing.

562 Basic Elements of Veterinary Medical Practice and Hospital Orientation III P 2

Continuation of 561. Milne.

Wi Qtr. Prereq: Vet Med 2nd yr standing.

563 Basic Elements of Veterinary Medical Practice and Hospital Orientation IV P 3

Continuation of 562. Milne.

Sp Qtr. Prereq: Vet Med 2nd yr standing.

600 Cardiovascular System P 6

A comparative study of the structure, function, and dysfunction of the cardiovascular system including arrhythmias, abnormal flow, congenital disease, etiologic agents, diagnostic methods, and therapeutic approaches. Hamlin.

Au Qtr. Prereq: Vet Med 2nd yr standing.

601 Respiratory System P 6

A comparative study of the structure, function, and dysfunction of the respiratory system including reaction to injury, ventilation defects, pneumonias, neoplastic disease, radiological diagnosis, and therapeutic approaches. Muir.

Au Qtr. Prereq: Vet Med 2nd yr standing.

602 Urinary System P 6

A comparative study of the structure, function, and dysfunction of the urinary system including diseases of the kidney, bladder, and urethra, and their diagnosis and treatment. Powers.

Au Qtr. Prereq: Vet Med 2nd yr standing.

603 Nervous System P 10

A comparative study of the structure, function, and dysfunction of the nervous system including the pathogenesis, pathophysiology, diagnosis, prevention, and treatment of nervous system diseases. Koestner.

Sp Qtr. Prereq: Vet Med 1st yr standing.

604 Endocrine System P 6

A comparative study of the structures, function and dysfunction of the endocrine system including diseases of each endocrine organ and their relationships to whole body functions. Capen.

Sp Qtr. Prereq: Vet Med 1st yr standing.

605 Reproductive System P 11

A comparative study of the structure, function, and dysfunction of the reproductive system including etiologic, pathogenic, pathophysiologic, therapeutic, and preventive aspects of reproductive diseases. Wearly.

Wi Qtr. Prereq: Vet Med 2nd yr standing.

606 Integumentary System P 6

A comparative study of the structure, function, and dysfunction of the integumentary system including important infectious and parasitic diseases, diagnosis, treatment, and prevention. Capen.
Sp Qtr. Prereq: Vet Med 3rd yr standing.

607 Musculoskeletal System P 10

A comparative study of the structure, function, and dysfunction of the musculoskeletal system including congenital, and acquired diseases, their radiographic diagnosis, treatment, and prevention. Rudy.
Sp Qtr. Prereq: Vet Med 2nd yr standing.

609 Digestive System P

Prereq: Vet Med 3rd yr standing.

609.01 Digestive System I P 6

A comprehensive study of the upper gastrointestinal tract of domestic animals including gastrointestinal parasitology. Rogers and staff.
Au Qtr. 5 cl, 1 2-hr lab.

609.02 Digestive System II P 6

A comprehensive study of the lower gastrointestinal tract including clinical gastroenterology. Rogers and staff.
Wi Qtr. 5 cl, 1 2-hr lab.

611 Preventive Medicine and Public Health P 5

Introduction to epidemiology and the food borne diseases will be presented with the more common zoonoses and this will be related to the role of comparative medicine in health maintenance and disease prevention in animals including man. Dorn.
Sp Qtr. Prereq: Vet Med 2nd yr standing.

612 Introduction to Veterinary Ophthalmology P 2

Developmental anatomy, comparative anatomy, histology and physiology of the eye and adnexa of domestic animals will be studied. Wyman.
Sp Qtr. Prereq: Vet Med 1st yr standing.

618 Hemic-Lymphatic System P 6

A comparative study of the hemic-lymphatic system with emphasis on dysfunction immunologic diseases diagnosis, treatment and prevention of hemopoietic disease. Hoover.
Wi Qtr. Prereq: Vet Med 2nd yr standing.

619 Applied Veterinary Medicine—Clinical Experience P 6

Intense training in clinical work for one term. staff.
Su Qtr. 7 days 24-hr lab duty, 1 cl. Prereq: 4th yr standing in Vet Med.

620 Applied Veterinary Medicine—Surgery P 10

Clinical instruction in each of the surgery services with emphasis on practical experiences. Rudy.
Au, Wi, Sp Qtrs. Prereq: Vet Med 3rd yr standing.

621 Applied Veterinary Medicine—Medicine P 9

Clinical instruction in each of the medical and preventive medicine services with emphasis on practical experiences. Staff.
Au, Wi, Sp Qtrs. Prereq: Vet Med 3rd yr standing.

622 Applied Veterinary Medicine—Diagnostic Laboratory Medicine P 9

Clinical instruction in each of the diagnostic

laboratory services with emphasis on practical experiences. Kociba.

Au, Wi, Sp Qtrs. Prereq: Vet Med 3rd yr standing.

700 Applied Veterinary Medicine

A series of clinical studies offered fourth-year veterinary medical students as part of the care curriculum.

Su, Au, Wi, Sp Qtrs. Prereq: Vet Med 4th yr standing. Repeatable to a maximum of 32 cr hrs.

700.01 Outpatient Clinics P 3

Clinical instruction in client relations, diagnosis, treatment, and prevention of diseases in out-patients.

700.02 Small Animal Medicine P 4

The application to small animal patients of the latest knowledge concerning diagnosis, treatment, and prevention of diseases.

700.03 Small Animal Surgery P 4

The application of principles of surgery to treatment of diseases of companion small animals.

700.04 Large Animal Medicine P 4

Clinical instruction and experience in the diagnosis, treatment, and prevention of diseases of horses, cattle, swine, and sheep.

700.05 Large Animal Surgery P 4

The application of principles of surgery to treatment of diseases of farm and other large species of animals.

700.06 Ambulatory Clinics P 4

The application of the principles of management, diagnosis, treatment, and prevention of disease in farm and exotic animals in the environment in which they are produced.

700.07 Radiology P 3

Application of radiological principles to diagnosis of diseases of animals.

700.08 Applied Preventive Medicine P 4

Intensive practical training: Public Health and Food Hygiene, meat inspection, Federal and State Disease Control Programs, and Herd Disease Management.

700.09 Clinical Anesthesiology P 3

4-8 clinic hrs per day with 24 hr patient care responsibility.

794 Group Studies in Veterinary Medicine P 1-8

Group studies in selected areas of veterinary medicine.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

Veterinary Pathobiology

Office: 207 Veterinary Pathology, 1925 Coffey Road, 422-5661

610 Advance Veterinary Parasitology P G 2-5

A review of literature, detailed study of classification, morphology, life histories, and economic importance of animal parasites. Chatfield and Kerr.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

625 Pathology Techniques P G 2-10

Theory and application of technical methods employed in modern animal disease research; coordinated approach to animal disease investigation, including functional-, chemical-, gross-, and histopathology. Yohn and Olsen.
Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

640 Pathobiology P G 3

Presentation of up-to-date seminars on topics in comparative cellular pathology by faculty in the College of Veterinary Medicine and Medicine.
Au Qtrs. Prereq: Permission of instructor. Offered in cooperation with Pathology.

693 Individual Studies P G 1-10

Laboratory, library, conference, and reports concerning animal disease problems. Cole, Koestner, Capen, and Yohn.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to maximum of 24 cr hrs.

711 Advanced Applied Veterinary Microbiology P 4

Advanced training in the causes of infectious diseases of animals.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 8 cr hrs.

715 Veterinary Surgical Pathology P G 2-10

Biopsy methods and diagnosis; surgical specimens are studied, and emphasis is placed upon the correlation of lesions and functional pathology. Koestner, Long, and Davis.

Sp Qtr. Prereq: Permission of instructor.

720 Comparative Oncology P G 2-10

A comparative study of the basic mechanisms of oncogenesis in man and animals. Koestner.

Au Qtr. Prereq: Permission of instructor.

794 Group Studies in Veterinary Pathobiology P G 1-8

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 24 cr hrs.

794.01 Applied Pathology

Correlation of functional morphological, and chemical abnormalities in disease of domestic and companion animals.

794.02 Comparative Pathology

The comparative response of animal species to injury caused by toxic and radioactive materials, nutritional, and metabolic disturbances, and infectious agents.

794.03 Applied Veterinary Immunology and Immunopathology

Discussion of the basic principles and theories of immunity and immunological disease as they apply to veterinary medicine.

Prereq: Permission of instructor.

794.04 Applied Veterinary Parasitology

Emphasis on the identification of the major parasitic pathogens of domestic animals.

Prereq: Permission of instructor.

794.05 Applied Veterinary Microbiology

Emphasis on the identification of the major bacterial and mycological pathogens of domestic animals.

Prereq: Permission of instructor.

794.06 Applied Veterinary Virology

Major viral pathogens of domestic animals are discussed and illustrated. Principles of virology

applicable to the recognition, differentiation, and prevention of diseases of animals are presented.

Prereq: Permission of instructor.

794.07 Diseases of Poultry and Game Birds

A study of the etiology, recognition, prevention and control of the important diseases of poultry and related game birds.

794.08 Current Topics of Veterinary Immunobiology**794.09 Advanced Gross Pathology P 1-5**

Advanced training in gross dissection and interpretation of gross lesions in animals. Staff.

Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing in Vet Med. Repeatable to a maximum of 5 credit hours. Elective in advanced gross pathology.

Sp Qtr. 2 hrs lecture and 2 hrs lab. Prereq: Baccalaureate and/or DVM.

794.10 Basic Histopathology P 3

Introductory basic pathological changes emphasizing identification, correlation to gross appearance, significance and resolution. Weisbrode.

Arr. Prereq: 2nd yr standing. Each student will be provided a microscopical slide study set and a microscope.

810 Advanced Systemic Pathology G 2-10

An advanced study of animal diseases as they affect all organ systems of the body. Capen.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

850 Seminar in Veterinary Pathobiology G 1

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 16 cr hrs.

999 Research in Veterinary Pathobiology G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Veterinary Physiology and Pharmacology

Office: 351 Sisson Hall, 1900 Coffey Road, 422-1391

410 Animal Physiology U 5

Consideration of concepts and principles involved in the function of various body systems and principles of growth and aging.

Au, Wi, Sp Qtrs. 5 cl. Prereq: Chem 102 or 122.

411 Animal Physiology U 5

Comparative study of physiology concepts and principles involved in endocrinology, metabolism and reproduction in various species of domestic animals.

Wi, Sp Qtrs. 5 cl. Prereq: Chem 102 or 122.

599 Humane Preparation of Animals for Physiologic Investigation U G 3

Selection of species, pre-anesthetics, anesthetics, minor surgical procedures, cardiac catheterization, radiography, necropsy examination, and drug therapy as applied to physiologic investigations. Hamlin.

Wi Qtr. Prereq: Advanced standing in zoology or Physiol 600 or equiv; permission of instructor. Not open to Vet Med students.

693 Individual Studies P G 3-15

Laboratory and library investigations concerning animal physiology and pharmacology problems. Smith, Powers, Hamlin, and Yeary.
Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

694 Group Studies P G 2-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

740 Analysis of Physiological Systems I P G 3

Several physiological systems will be analyzed in detail using a combination of classical mathematical analysis, model building, and newer analog and digital techniques. Hensel, Hamlin, and Powers.
Sp Qtr. 2 cl, 1 3-hr lab. Prereq: Permission of instructor.

741 Analysis of Physiological Systems II P G 3

Several physiological systems will be analyzed in detail using a combination of classical mathematical analysis, model building, and newer analog and digital techniques. Hensel, Powers, and Hamlin.
Su Qtr. 2 cl, 1 3-hr lab. Prereq: Permission of instructor.

764 Design and Analysis of Comparative Biomedical Research P G 3

Theory and application of basic statistical concepts as they affect design, analysis, and interpretation of veterinary medical research. Hensel, Powers, and Hamlin.

Au Qtr. Prereq: Permission of instructor. Not open to students with credit for 640 or Prev Med 764 or Vet Prev 764. Cross-listed in Preventive Medicine and Veterinary Preventive Medicine.

775 Design and Analysis of Comparative Biomedical Research P G 3

Theory and application of basic statistical concepts as they affect design, analysis, and interpretation of veterinary medical research. Hensel, Powers, and Hamlin.

Wi Qtr. Prereq: Permission of instructor. Not open to students with credit for 641 or Vet Prev 775. Cross-listed in Veterinary Preventive Medicine.

777 Veterinary Clinical Toxicology P G 3

The diagnosis and principles for treatment of chemical poisonings of domestic animals will be presented by lecture and discussion. Emphasis will be on toxic substances most frequently encountered in the practice of veterinary medicine. Cases presented to the OSU veterinary hospital will be discussed when available.

Wi Qtr. Lecture/demonstration. Prereq: Permission of instructor.

778 Comparative Mammalian Pharmacology P G 3

Considerations of the pharmacological actions, chemical and physical properties, metabolism, toxicities, important idiosyncrasies, economics, and clinical applications of veterinary drugs, except anesthetic and antimicrobial agents.

Au Qtr. Lecture/demonstration. Prereq: Permission of instructor.

779 Comparative Mammalian Toxicology P G 5

Principles of comparative mammalian toxicology and their relationships to the safety evaluation of chemical substances. Yeary.

Sp Qtr. 4 cl, 2-hr lab.

780 Antimicrobial Therapy in Veterinary Medicine P G 3

A detailed study of the basic principles and clinical application of antimicrobial drugs in veterinary medicine. Powers.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

781 Principles of Veterinary Clinical Pharmacology P 3

Principles of pharmacokinetics and applications of kinetic parameters to drug therapy in domestic animals will be discussed. Provides basis for choice of drug and dosage regimen. Baggot.

Sp Qtr. 2-hr lec and 1-hr conf. Prereq: Vet Med 3rd or 4th yr standing and written permission of instructor.

790 Veterinary Physiology P G 3

Comparative electrocardiography. Hamlin and Smith.
Au Qtr. 2 cl, 2 lab hrs. Prereq: Permission of instructor.

791 Veterinary Physiology P G 3

Comparative hemodynamics and cardiovascular sound. Hamlin and Smith.

Wi Qtr. 2 cl, 2 lab hrs. Prereq: 790 or permission of instructor.

792 Veterinary Physiology P G 3

Advanced comparative cardiovascular physiology with emphasis upon circulatory response to stress of various congenital and acquired cardiovascular defects. Hamlin and Smith.

Sp Qtr. 2 cl, 2 lab hrs. Prereq: 791 or permission of instructor.

794 Group Studies P G 1-6

Group studies course in areas of comparative physiology and pharmacology.

Su, Au, Wi, Sp Qtrs. Prereq: Professional or graduate student status.

795 Advanced Comparative Electrocardiography P G 3-5

Cellular and cardiac electrophysiologic and clinical features of complex cardiac arrhythmias and conduction disturbances. Hamlin.

Au Qtr. Prereq: 790 or permission of instructor.

796 Techniques in Comparative Physiology and Pharmacology P G 3

Laboratory methods in the study of various phenomenon associated with reproduction and pharmacology of sex steroids and gonadotropins. Saiduddin.

Sp Qtr. Prereq: Vet Med and Med 3rd and 4th yr standing, grad, or permission of instructor.

797 Comparative Reproductive Physiology and Pharmacology P G 2

Discussion of factors affecting sex-ratios, puberty, cyclic ovarian activity and its control; factors affecting fertility, parturition and senescence of gonads. Saiduddin.

Au, Sp Qtrs. Prereq: Vet Med 3 or 4th yr standing, grad, or permission of instructor.

799 Seminar P G 2

Lectures and conferences on selected topics in veterinary physiology and pharmacology.

Au, Wi, Sp Qtrs. 1 2-hr conf and lec. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

999 Research in Veterinary Physiology and Pharmacology G Arr

Research for thesis or dissertation purposes only.
Su, Au, Wi, Sp Qtrs.

Veterinary Preventive Medicine

Office: 252 Sisson Hall, 1900 Coffey Road, 422-1206

200 Basic Animal Hygiene U 3

Causes of disease and the relationship of these causes to the animal's environment. Helwig.
Au Qtr. 3 cl.

201 Applied Animal Hygiene U 3

Various common disease responsible for losses to the livestock industry, with emphasis on control. Helwig.
Wi Qtr 3 cl. Prereq: 200 or equiv.

616 Germfree and Gnotobiotic Animals P G 5

The instrumentation of biological research through application of germfree and gnotobiotic animals.
Wi, Sp Qtrs. 3 2-hr cl and lab. Prereq: Advanced standing in biological sciences, Micrbiol 607 or equiv, and permission of instructor.

693 Individual Studies P G 2-5

Laboratory and library investigations of animal disease problems involving veterinary preventive medicine. Helwig and Jones.
Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

694 Group Studies P G 2-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

715 Veterinary Public Health P G 3-8

Laboratory and library investigation of veterinary public health problems. Helwig, Jones, and Russell.
Su, Au, Wi Qtrs. Prereq: 611. Not open to students with credit for 810.

764 Design and Analysis of Comparative Biomedical Research P G 3

Theory and application of basic statistical concepts as they affect design, analysis, and interpretation of veterinary medical research.

Au Qtr. 3 hrs lec/demonstration. Prereq: Permission of instructor. Not open to students with credit for Prev Med 764 or Vet Phys 640 or 764. Cross-listed in Preventive Medicine and Vet Phys.

765 Biostatistics and Computers in Medical Research P G 3

Review of the fundamental concepts of biostatistics, including more complex analysis of variance designs, integrated with application of the electronic computer.

Wi Qtr. 3 hr lec/demonstration. Not open to students with credit for Prev Med 765 or 785. Cross-listed in Preventive Medicine.

775 Design and Analysis of Comparative Biomedical Research P G 3

Theory and application of basic statistical concepts as they affect design, analysis and interpretation of veterinary medical research.

Wi Qtr. 3 cl. Prereq: Permission of instructor. Not open to students with cr for Vet Phys 641 or 775. Cross-listed in Vet Phys.

785 Biological Research Techniques P G 3

The more common laboratory animals used in biological research and testing will be dealt with as they relate to research purposes, design, and application.

Au, Wi, Sp Qtrs. 2 2-hr cl. and lab. Prereq: Advanced standing in biological sciences, Micrbiol 607, or equiv, and permission of instructor.

794 Group Studies

A course providing small group instruction in the topics designated.

Su, Au, Wi, Sp Qtrs. Prereq: Vet Med 3rd or 4th year standing. Repeatable to a maximum of 30 cr hrs.

794.01 Public Health-Organization, Environmental Health, Food-Borne Illnesses P 2

Deal with the application of public health principles to the solution of community problems.

794.03 Prevention of Communicable Diseases P 2

Fundamental approaches used by State and Federal Animal Health Agencies for prevention, control, and eradication of diseases.

794.04 Food-Borne Illnesses and Human Health P 2

Detailed study of principle zoonotic diseases transmitted by meat foods and food-borne intoxications and infections as related to personal hygiene of food handlers and sanitary food handling practices; the epidemiological approach to problem solving.

794.05 Applied Food Hygiene P 1-3

Ante-mortem and post-mortem inspection procedures; disposition of diseased carcasses and parts—applied pathology as relates to meat inspection. Meat chemistry and processing; environmental sanitation; food microbiology.

794.07 Environmental Sanitation P 3

Students are provided an environmental sanitation book. Discussions related to animal and food hygiene will concentrate on housing, ventilation, waste disposal, soil, water, air, etc.

794.09 Preventive Medicine for Dairy Cattle P 2

Principles and applications of preventive medicine in establishing and maintaining dairy herd health promotion programs.

794.10 Applied Zoo Animal Preventive Medicine and Public Health P 1-4

Practice control and preventive practices intended to protect animal and human health including food, housing, waste, and various other environmental factors, together with testing and screening procedures.

794.11 Laboratory Animal Facilities P 1-2

To provide a progressive course of instruction pertaining to facilities, equipment, materials, and caging which is comprehensive to assure the development of veterinarians who can provide support where laboratory animals are used.

794.14 Preventive Medicine for Swine Herds P G 2

A discussion of the practical applications of preventive medicine in swine herd health programs with special attention to management, control and treatment. Ingalls.

Sp Qtr. 2 cl.

794.15 Veterinary Health Management Programs for Beef Cattle and Breeding Sheep Herds P G 2

Management, immunization, medication and preventive medical practice to control and prevent common diseases of cattle and sheep will be stressed. Hartwig.

Au Qtr. 2 cl.

794.16 Veterinary Health Management Programs for Beef Feedlots P G 1

Current knowledge of management, disease control and treatment and preventive medical practice of beef feedlots will be covered.

Wi Qtr. 1 cl.

794.17 Production of Quality Milk P G 2

Designed to provide training in mastitis control and in quality milk production Heider.

Wi Qtr. 1 cl, 1 2-hr lab. Prereq: Vet Med 4th yr standing.

794.18 Nutrition of Food Producing Animals P G 2

Familiarization with current feeding practices for normal animals. Proper use of feeds-nutrients-additives for maximum economic production and prevention of nutritional and metabolic disease.

Sp Qtr. 2 cl. Prereq: Vet Med 3rd yr standing.

850 Seminar in Veterinary Preventive Medicine G 1

Au, Wi, Sp Qtrs. Repeatable to a maximum of 3 cr hrs.

999 Research in Veterinary Preventive Medicine G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs.

Welding Engineering

Office: 124 Welding Engineering Laboratories, 190 West 19th Avenue, 422-6841

240 Forging, Heat Treating, and Welding U 4

Welding fundamentals and applications; intended for students not having an engineering background; laboratory work designed to augment classroom discussions and provide basic welding skills.

Su, Au, Wi, Sp Qtrs. 3 cl, 3 1-hr lab. Safety glasses must be worn in laboratory.

294 Group Studies in Welding Engineering U 1-15

The student must register for particular topics from fields of welding engineering listed below; the topics, cr hrs, and instructors will be announced in quarter previous to the quarter offered:

- a—Welding Refractory Metals
- b—Arc Welding Systems
- c—Manufacturing in the Welding Industry
- d—Electron Beam Technology
- e—Plasma Technology
- f—Advanced Nondestructive Testing
- g—Welding Discontinuities
- h—Welding Fluxes and Slags
- i—Welding Discontinuities Evaluation
- j—Residual Stresses in Welding
- k—Sonic Power Systems
- l—Weld Metal Solidification

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

302 Introduction to Welding Engineering U 4

An introduction to welding engineering for undergraduate students to familiarize them with the broad field of welding engineering and particularly welding processes.

Wi Qtr. 3 cl, 3 1-hr lab. Prereq: Ind Eng 311 or equiv with written permission of instructor. Safety glasses must be worn in laboratory.

340 Welding Science and Its Application U 3

A study of the engineering fundamentals of welding; design, materials, and processes are considered as related to the welding field.

Sp Qtr. 3 cl. Prereq: 240 or permission of instructor. Not open to students majoring in weld eng. Not open to students with credit for 640.

430 Applied Engineering Analysis U 4

The analysis of engineering systems by the application of fundamental principles of conservation of matter and energy, and operational techniques. McMaster.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: Physics 133 and Math 255.

488 Welding Engineering Inspection Trip U 1

A group visit to selected industrial facilities in a localized region of the state or in a single community.

Sp Qtr. Between Wi and Sp Qtrs. Safety glasses are required.

489 Practical Experience in a Welding Organization U 2

Experience in an engineering organization and the preparation of an acceptable report on the organization and the work done.

Au Qtr. 10 wks during Su Qtr. Prereq: Permission of chairman.

501 Principles of Welding U G 4

Theory, equipment, techniques, and control of fusion welding with electric arc, gas, and other processes; welding codes and specifications; application of electrodes and processes. McMaster.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 302, 430, and Elec Eng 500. Safety glasses must be worn in laboratory.

502 Principles of Resistance Welding U G 4

Theory and operation of resistance welding equipment, power supplies, electronic controls, welding codes and schedules, and process controls. McMaster.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 430 and Elec Eng 520. Not open to students with credit for 602. Safety glasses must be worn in laboratory.

510 Physics of Welding U G 4

The application of basic principles in the welding processes.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: Ind Eng 311 and Eng Mech 420. Not open to students with credit for 610. Safety glasses must be worn in laboratory.

588 Welding Engineering Inspection Trip U 1

A group visit to various industrial plants; the plants selected are generally grouped in one community; a written report is required.

Sp Qtr. Between Wi and Sp Qtrs. Safety glasses are required.

589 Practical Experience in Welding Industry U 2

Experience in an engineering organization and the preparation of an acceptable report on the organization and the work done.

Au Qtr. 10 wks during Su. Prereq: Permission of chairman.

601 Semi-Automatic Welding Processes U G 4

Laboratory and lecture study of welding power supplies utilized in semi-automatic arc-welding process including metal-inert-gas, tungsten-inert-gas, and submerged-arc process.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 501 and Elec Eng 520. Safety glasses must be worn in laboratory.

611 Theory of Welding U G 4

The application of basic metallurgical principles in the welding processes; the weldability of metals is studied; laboratory work involves physical and metallographic examination of welded specimens.

Au Qtr. 4 cl, 1 3-hr lab. Prereq: 501 and Metal En 500. Safety glasses must be worn in laboratory.

612 Application of Welding Engineering U G 4

The principles by which manufacturing procedures for materials may be developed; an analysis of processing methods; material, physical and mechanical properties, inspection, and performance and service testing. McCauley.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 611. Safety glasses must be worn in laboratory.

630* Analysis of Continuous Systems U G 3

An energy analysis of analogous one-dimensional linear distributed systems with applications to welding process and control systems. McMaster.

Sp Qtr. 3 cl. Prereq: 430 or permission of instructor.

631 Nondestructive Testing U G 4

Principles, equipment, techniques, and interpretation of nondestructive tests with X-rays, radioisotopes, magnetic fields, penetrants, ultrasonics; eddy currents, and other probing media. McMaster.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: Elec Eng 520. Safety glasses must be worn in laboratory.

680* Continuous Systems Laboratory U G 1

Laboratory exercises in measurement of transients in continuously-distributed linear engineering systems (particularly on advanced welding equipment), and analog computer solutions where feasible.

Sp Qtr. 1 3-hr lab. Concur: 630.

694 Group Studies in Welding Engineering U G 1-15

The student must register for particular topics from fields of welding engineering listed below; the topics, cr hrs, and instructors will be announced in quarter previous to the quarter offered:

- a—Welding Refractory Metals
- b—Arc Welding Systems
- c—Manufacturing in the Welding Industry
- d—Electron Beam Technology
- e—Plasma Technology
- f—Advanced Nondestructive Testing
- g—Welding Discontinuities
- h—Welding Fluxes and Slags
- i—Welding Discontinuities Evaluation
- j—Residual Stresses in Welding
- k—Sonic Power Systems
- l—Weld Metal Solidification

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

704* Theory of High Energy Density Welding Processes U G 3

Theory of physical and thermal processes in high-pressure arc, plasma, electron beam, laser, and other high-energy-density welding processes. McMaster.

Sp Qtr. 3 cl. Prereq: 501; and Elec Eng 520, or equiv; or permission of instructor.

705†* Principles of Welding Process Control Systems U G 3

Principles of continuously-variable and digital control systems for manual, mechanized, automatic, and feedback operation of arc, resistance, and advanced welding processes. McMaster.

Sp Qtr. 3 cl. Prereq: 430, 501, 502 and Elec Eng 520 and 550; or permission of instructor.

720 Welding Design U G 4

The analysis and design of statically determinate and indeterminate members and structures; a study of welding procedures for shop fabrication and field erection. W. Green.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: Civil Eng 530.

721 Welding Design U G 4

The analysis and design of machine elements and frames to a given set of shop conditions and facilities; emphasis on cost factor considerations. W. Green.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 720 and Mech Eng 350.

722 Welding Design U G 4

The design of resistance welded products; a selection of process and equipment and a study of tooling used in high production work. W. Green.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 502 and 721.

755†* Welding Process Control Laboratory U G 1

Laboratory experiments in basic instrumentation and control systems for welding processes such as arc, resistance, electron-beam, and others.

Sp Qtr. 1 3-hr lab. Concur: 705.

793 Individual Studies in Welding Engineering U G 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

799 Thesis U 2-15

Undergraduate research providing an opportunity to publish a report in appropriate technical publications.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr. standing and permission of instructor. Repeatable to a maximum of 15 cr hrs.

884 Advanced Problems in Welding Engineering G 2-9

Design to give advanced students opportunity to pursue advanced study; work undertaken may be elected from the following fields of welding engineering:

- a—Chemical Reactions in Welding
- b—Advanced Welding Processes I
- c—Advanced Analysis of Welding Weldments
- d—Advanced Welding Metallurgy
- e—Advanced Welding Design
- f—Weld Bond

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs.

894 Group Studies in Welding Engineering G 1-15

The student must register for particular topics from fields of welding engineering listed below; the topics, cr hrs, and instructors will be announced in quarter previous to the quarter offered:

- a—Welding Refractory Metals
- b—Arc Welding Systems
- c—Manufacturing in the Welding Industry
- d—Electron Beam Technology
- e—Plasma Technology
- f—Advanced Nondestructive Testing
- g—Welding Discontinuities
- h—Welding Fluxes and Slags
- i—Welding Discontinuities Evaluation
- j—Residual Stresses in Welding
- k—Sonic Power Systems
- l—Weld Metal Solidification

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

999 Research in Welding Engineering G Arr

Research for thesis or dissertation purposes only.
Su, Au, Wi, Sp Qtrs.

Zoology

Office: 104 Botany and Zoology Building, 1735 Neil Avenue, 422-8088

106 General Biology U 5

Introductory course stressing basic concepts and methodologies as they relate to the interactions of biological systems in a contemporary world.

Su, Au, Wi, Sp Qtrs. 2 cl, 3 bio-learning center hrs. Not open to students with credit for 111, Biology 101, Botany 106 or 111. Not intended for students planning to major in the biological sciences. Cross-listed in Botany.

110 General Biology U 5

An introduction to the biological sciences, emphasizing the important concepts and principles which tend to unify the study of life at various levels of organization.

Su, Au, Wi, Sp Qtrs. 2 cl, 3 bio-learning center hrs. H110 (honors) may be available to students enrolled in an honors program or by permission of dept. Not open to students with credit for Biology 100 or 102, or Botany 110. Cross-listed in Botany.

201 General Zoology U 5

A study of the variety of animals with emphasis on organ systems and their functions, the interrelationships with each other, space, and time. Myser, Giltz, and Kessler.

Au, Wi, Sp Qtrs. 3 cl, 2 2-hr labs. Prereq: 110 or Biology 100 or Botany 110. Not open to students with credit for 101.

205 Ecology and Environmental Concern U 2

An analysis of environmental problems, the facts underlying them, and their implication for the human future as seen by professional ecologists. Collinvaux and Mitchell.

Sp Qtr. 2 cl. Credit does not count toward a major in zoology. Not open to students with credit for Biology 205.

211 Invertebrate Zoology U 5

A survey of the invertebrates with emphasis on

morphology and relationships of representative types. Mitchell.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 201 or equiv. Not open to students with credit for 402.

220 Ornithology U 5

A study of the general biology and classification of birds, with emphasis on field identification of local species; field trip each Saturday. Giltz.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: 201 or equiv with written permission of instructor.

232 Introductory Physiology U 5

A survey of human reproduction, digestion, metabolism, respiration, circulation, kidney function, nerves, nervous system, sense organs, and muscle function. Greenwald.

Wi, Sp Qtrs. 4 cl, 1 3-hr lab. Prereq: 110 or Botany 110 or Biology 100. Credit does not count toward a major in zoology.

235 Introductory Vertebrate Anatomy U 5

An introduction to vertebrate anatomy with emphasis on mammalian anatomy. Dalrymple and Gaunt.

Au, Wi Qtrs. 3 cl, 1 3-hr lab. Prereq: 110 or Botany 110 or Biology 100. Not open to pre-medical students or to students with cr for 231, 335 or 434. Credit does not count toward a major in zool. *dissection of cat*

240 Introductory Ethology U 5

Observations of animal behaviors, and introductory analysis of their adaptive value, physiological mechanisms, development, and evolution; emphasis on movie presentations, reading, and small-group discussions. Grubb.

Sp Qtr. 4 cl, 1 2-hr field work per week. Prereq: 201.

293 Individual Studies U 1-5

Individual work in the field of the chosen problem.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 201 and written permission of instructor. Only 5 hrs to count on zoology major. Repeatable to a maximum of 15 cr hrs.

313 Introduction to Ecology**313.01 Lecture U 3**

A lecture series introducing the study of the distribution and abundance of species, the basic energetics of living systems and evaluation of the ecosystem concept. Collinvaux and Mitchell.

Au, Wi Qtrs. 3 cl. Prereq: 201 or Botany 102 or 112. Not open to students with credit for Biology 313, 313.01 or 313.02 or Botany 313.01. Cross-listed in Botany.

313.02 Laboratory U 2

A laboratory to acquaint students with elementary sampling procedures and statistics used in ecology field work; course is complimentary to 313.01. Collinvaux and Mitchell.

Au, Wi Qtrs. 2 lab hrs. Prereq or concur: 313.01. Not open to students with credit for Biology 313, 313.01 or Botany 313.02. Cross-listed in Botany.

320 Introduction to Biology of the Sea U 3

Kinds, distribution, interactions, and physiological problems of marine organisms; the oceanic environment; pollution and productivity of the oceans. Hillis.

Wi Qtr. 3 cl. Prereq: 313.01 or equiv.

335 Morphology of the Vertebrates U 5

Basic structural characteristics of vertebrates in evolutionary, developmental, and functional contexts. Gaunt and Dalrymple. *dissection of cat*

Au, Wi Qtrs. 4 cl, 1 3-hr lab. Prereq: 201. Not open to students with credit for 231, 235, or 434. For pre-medical or science majors.

420 Evolution U 5

The principles of organic evolution; demonstrations and discussion of the facts and theories underlying the evolution of man and other living things. Cook and Valentine.

Au, Wi Qtrs. 5 cl. Prereq: 201. Not open to students with credit for Biology 420.

432 General Physiology U 5

A laboratory survey of physiological mechanisms in animals. Lustick.

Wi Qtr. 3 cl, 2 3-hr labs. Prereq: Chem 242 or equiv, Physics 113 or equiv, and 15 cr hrs in biological sciences.

433 Comparative Embryology and Development U 5

A basic course considering descriptive and experimental work pertaining to developmental processes in unicellular and multicellular animals with emphasis on the vertebrate embryo. Tassava.

Sp Qtr. 3 cl, 2 2-hr labs. Prereq: 201 or equiv, or written permission of instructor.

434* General Histology U G 5

A detailed study of the tissues of vertebrate animals, and a general survey of the microscopic structure of various organs. Pappas and Parrish.

Sp Qtr. 3 cl, 2 3-hr labs. Prereq: 434 or equiv. Not open to students with credit for Anat 607.

535 Problems in Vertebrate Structure U G 5

Exploration of interactions of historical, mechanical, and functional factors that have selected for structures of present vertebrates. Gaunt.

Au Qtr. 4 cl, 1 3-hr lab. Prereq: 335. Not open to students with cr for 434.

610 Animal Parasitology U G 5

The general principles of parasitology, emphasizing morphology, life histories, epidemiology, identification and host relationships of protozoan and metazoan parasites of zoological, medical and veterinary importance. Pappas.

Au, Wi Qtrs. 3 cl, 2 3-hr labs. Prereq: 201 or equiv, jr standing or above.

611* Animal Parasitology U G 5

Emphasis on the parasites infesting freshwater vertebrates, including field and laboratory experiences, host examination, and techniques dealing with staining, fixing, and mounting of specimens. Crites.

Su Qtr (2nd term). Franz Theodore Stone Lab, 3 all-day cl per wk. Prereq: 201 or equiv.

612 Invertebrate Zoology U G 5

The collection and identification of invertebrate animals, development of methods of classification, and use of keys. Cook and Zapotosky.

Su Qtr (1st term). Franz Theodore Stone Lab, 3 all-day cl per wk. Prereq: 201 or equiv.

620 Zoology of Vertebrates U G 5

A study of the various vertebrate groups, emphasizing their origin, phylogeny, classification, life histories, habits, distribution, and economic importance. Downhower.

Au, Sp Qtrs. 3 cl, 2 2-hr labs. Prereq: 201 or equiv.

621 Ichthyology U G 5

Study of the distribution and classification of fishes which includes methods of identification, collection, and preservation. Berra and Cavender.

Su Qtr (1st term). Franz Theodore Stone Lab, 3 all-day cl per wk. Prereq: 201 or equiv.

622* Herpetology U G 5

Local species of reptiles and amphibians, their habits, life histories, ecology, and classification. Dalrymple.

Su Qtr (2nd term). Franz Theodore Stone Lab, 3 all-day cl per wk. Sp Qtr on Columbus campus, 4 cl, 1 2-hr lab. Prereq: 201 or equiv.

624* Advanced Ornithology U G 5

Topics include instinctive behavior in the life of birds, the breeding cycle, social relations, territory, ecology, characteristics of population, and techniques in field study of birds.

Su Qtr (1st term). Franz Theodore Stone Lab, 3 all-day cl per wk. Prereq: 201 or equiv.

625 Mammalogy U G 5

The comparative morphology, taxonomy, life histories, distribution, and importance of the mammals. Harder.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 201 or equiv.

626 Biology of Fishes U G 5

The laboratory emphasizes ecological and systematic ichthyology; lectures emphasize the behavior, migration, distribution, and evolution of fishes. Cavender.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 201, 15 cr hrs in biological sciences, and permission of instructor.

633 Vertebrate Physiology U G 5

The physiology of vertebrate animals with emphasis on exchange rates, metabolic rates, energetics, and homeostasis. Lustick.

Sp Qtr. 3 cl, 2 3-hr labs. Prereq: 432 or equiv, or grad standing.

635* Comparative Chordate Morphology U G 5

Clarification by demonstration and dissection of the morphological evidences for current theories of chordate evolution and phylogeny; individual projects required. Dalrymple.

Sp Qtr. 2 3-hr lec/labs. Prereq: 335 or 434 or permission of instructor.

640 Animal Behavior U G 5

An experimental study of the biological basis of animal reactions. Putnam.

Au, Wi Qtrs. 3 cl, 2 2-hr labs. Prereq: 240.

647* Plankton U G 5

Identification, quantification, distribution and control of freshwater plankton. Culver.

Au Qtr. 4 2-hr cl, several field trips. Prereq: Jr standing with 20 cr hrs in biological sciences. Not open to students with credit for Botany 647. Cross-listed in Botany.

650 Principles of Animal Ecology U G 5

Principles and methods of animal ecology and their application to other closely related biological sciences. Stansbery.

Sp Qtr. 3 cl, 2 2-hr labs, Sat field trips. Prereq: 313.01 and 313.02.

651* Field Zoology U G 5

Field and laboratory identification of aquatic and terrestrial vertebrates and invertebrates of the region, in relation to habitats occupied. Downhower and Valentine.

Su Qtr (1st term). Franz Theodore Stone Lab, 3 all-day cl per wk. Prereq: 201 or equiv with written permission of instructor.

652 Limnology U G 5

Study of physical, geological, chemical and biological factors influencing freshwater life; field and laboratory techniques for determining lake morphometry, chemistry and biological productivity are emphasized. Herdendorf.

Su Qtr (1st term). Franz Theodore Stone Lab, 3 all-day cl per wk. Prereq: 201 or equiv with written permission of instructor, 10 cr hrs in chem, 10 cr hrs in physics.

653 Fish Ecology U G 5

Field and laboratory studies of life histories and interspecific relationships of fishes and of the various factors influencing their abundance. Griswold.

Su Qtr (2nd term). Franz Theodore Stone Lab, 3 all-day cl per wk. Over night field trips. Prereq: 621 or equiv.

654†* Ecological Physiology of Aquatic Animals U G 5

Study of the aquatic habitat includes physical and chemical adjustment, tolerance, and acclimatization to environment of vertebrates and invertebrates. Cook.

Su Qtr (2nd term). Franz Theodore Stone Lab, 3 all-day cl per wk. Prereq: 201 or equiv, and 10 cr hrs in chem, physics, or physiol.

655 Limnology U G 5

A study of the physical, chemical, and biological factors influencing the biological productivity of inland waters and of techniques and equipment used in evaluating them. Culver.

Sp Qtr. 3 hr lec/seminar, 1 4-hr lab. Prereq: 10 cr hrs in chem, 20 cr hrs in biological sciences, and permission of instructor.

660 Fisheries Biology U G 5

The productivity of fish populations and the ecological relationships between fishes and other aquatic organisms. R. Stein.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: 655 or equiv.

661 Wildlife Biology U G 5

An introductory course in the biology and importance of wildlife; emphasis on biological principles as they relate to birds and mammals. Harder.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: 15 cr hrs in zoology above the 200 level, including 313.01.

662 Wildlife Biology Techniques U G 5

Techniques employed in the field of wildlife biology, with emphases on game birds and mammals; designed for zoology majors specializing in wildlife biology. Bookhout and Grau.

Wi Qtr. 3 cl, 2 2-hr labs, Sat field trips. Prereq: 661 or equiv, Genetics 650 or equiv, and permission of instructor.

665 Research Techniques in Fishery Biology U G 5

Techniques employed in the field of fishery biology; designed for zoology majors specializing in fishery biology. R. Stein.

Sp Qtr. 2 cl, 2 3-hr labs, 2-3 hrs lab/field work arr. Prereq: 313.01 and 655.

670† Radiation Biology U G 5

A study of the principles of radiation biology and their application to high school and college teaching.

Su Qtr. Prereq: High school teacher status and Zoology 201 or equiv, Physics 516 or concur, and 10 cr hrs in general chem and physics. NSF Summer Institute students only. Not open to students with credit for Biology 670.

693 Individual Studies U 2-5 G 2-10

Individual work in the field of the chosen problem.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. No more than 5 cr hrs may be counted toward an undergrad zoology major. Repeatable to a maximum of 15 cr hrs for undergrads.

a—Anatomy. Gaunt and Dalrymple.

b—Animal Behavior. Putnam, Rothenbuhler, Gaunt, Grubb and R. Stein.

c—Animal Ecology. Peterle, Stansbery, Giltz, Colinvaux, Downhower, Mitchell, Culver, Berra, and Harder.

d—Embryology and Vertebrate Zoology. Downhower and Tassava.

e—Invertebrate Zoology. Cook, Crites, Mitchell, and Culver.

f—Ornithology. Gaunt, Grubb, Lustick, Putnam, and Kessler.

g—Parasitology. Crites, Martin, Mitchell, and Pappas.

h—Wildlife Biology. Bookhout, Grau, Harder, and Peterle.

i—General Limnology. Britt, Colinvaux, Culver, Hillis, Smith, and Herdendorf.

j—Comparative Physiology. Lustick, Greenwald, Tassava, and Cook.

k—Electron Microscopy. Parrish and Cook.

l—Population Ecology. Colinvaux, Downhower, Peterle, Mitchell and R. Stein.

m—Systematics. Berra, Cavender, Cook, Gaunt, Valentine, Mitchell, and Stansbery.

n—Ichthyology. Berra, Cavender, and R. Stein.

o—Fisheries Biology. Berra, Cavender, R. Stein, Griswold and Carline.

694 Group Studies U G 2-5

Group work in the field of the chosen problem (see topics in 693).

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs for undergrads and to a maximum of 35 cr hrs for grads.

698 Study Tours U G 1-15

Study tours in the zoological sciences.

Sp Qtr. Classwork at OSU arr, travel and study abroad.

Prereq: Demonstrated interests and/or abilities in subjects pertinent to the study area, by written permission of tour leader/instructor. Repeatable for different titled study tours only.

700* Principles of Biogeography U G 5

Principles and patterns of animal and plant distribution over the world, using historical, geographic, and biological approaches. Valentine.

Sp Qtr. 5 cl. Prereq: Permission of instructor.

710 Fish and Wildlife Parasitology U G 5

Emphasis on parasites infesting fish and wild animals, on life histories, ecology, host-parasite relationships, pathology and control, field and laboratory experience; host examination techniques. Crites.

Sp Qtr. 3 cl, 2 2-hr labs. Prereq: Permission of instructor.

711 Ecological Investigations of Biotic Areas of North America U G 8

Full time of student will be required traveling and living away from the campus; intensive field work in a variety of environments will involve both supervised and independent study. Downhower, Mitchell and Dalrymple.

Au Qtr. Field trip during the month preceding the qtr in which this course is offered; 1 weekly 2-hr seminar on campus during the qtr. Prereq: 15 cr hrs in biological sciences at 600 level or above or equiv with written permission of instructor. Repeatable by permission of instructor only. Travel and subsistence costs for the field trip will be borne by the student. For further information contact the dept office.

714 Environmental Pollution Abatement U G 5

Problems, philosophies, principles, and methods of pollution abatement in the total environment; quantitative approaches to waste management in air, water, and land systems. Carey.

Wi Qtr. 5 cl. Prereq: Sr or grad majors in engineering or sciences. Not open to students with credit for Agri Eng 714, Chem Eng 714, Civil En 714, and Metal En 714. Cross-listed in Agri Eng, Chem Eng, Civil En, and Metal En.

721 Marine Biology Seminar U G 3

Detailed study of various aspects of marine environment and marine life. Hillis.

Sp Qtr. 3 cl. Prereq: Sr or grad standing; 320 or equiv with permission of instructor. Repeatable to a maximum of 6 cr hrs.

723 Biology of Birds U G 3

The aspects of anatomy, physiology, taxonomy, and behavior which are pertinent to the study of birds. Putnam.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: 220, 240 and 434, or written permission of instructor. Not open to students with credit for 623.

730 Mechanisms of Animal Development U G 5

An advanced course concerned with elucidating the cellular and molecular interactions involved in developmental processes with emphasis on experimental embryology. Tassava.

Wi Qtr. 3 cl, 1 3-hr lab, 3 lab hrs arr. Prereq: 433 or equiv, or written permission of instructor.

740 Behavioral Ecology U G 5

Comparative study of mechanisms, ontogeny, function and evolution of behavior in its ecological and social contexts. Grubb.

Au Qtr. 3 1½-hr cl. Prereq: Sr standing; 640 or Psych 601, or equiv with written permission of instructor.

H783 Honors Course U 3-5

A program of leading and research for each student with individual conferences, reports, and Honors thesis.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the courses in biological sciences and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degrees BS or BA *with distinction* in zoology. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs.

800 Zoological Literature and Preparation of Manuscripts G 3

A study of library organization, bibliographies, and guides to zoological literature; the preparation of scientific papers for publication. Bookhout.

Wi Qtr. 2 cl, 1 2-hr lab. Prereq: 15 cr hrs in entomology or zoology at the 600 level or above.

811* Advanced Zoology of Invertebrates G 5

A study of the morphology, physiology, life histories, and classification of the acoelomate pseudocoelomate invertebrates and the annelid worms. Cook.

Sp Qtr. 3 cl, 2 2-hr labs. Field trips including a 1 wk optional trip to a marine lab. Prereq: 211 or equiv and permission of instructor.

812* Advanced Zoology of Invertebrates G 5

A study of the morphology, physiology, life histories, and classification of the eucoelomate invertebrates exclusive of annelid worms. Cook.

Sp Qtr. 3 cl, 2 2-hr labs. Field trips including 1 wk optional trip to a marine lab. Prereq: 211 or equiv and permission of instructor.

820 Biological Effects of Ionizing Radiation G 5

A course in the theory, use and analysis of the effects of ionizing radiation on living organisms. Myser.

Sp Qtr. 2 cl, 2 2-hr labs. Prereq: Permission of instructor.

821* Helminthology G 5

A study of the morphology, physiology, life histories, epidemiology, and pathology of parasitic acoelomate helminths. Crites.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 610 or 611 or equiv and permission of instructor.

822* Helminthology G 5

A study of the morphology, physiology, life histories, epidemiology, and pathology of the parasitic pseudocoelomate helminths. Crites.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 610 or 611 or equiv and permission of instructor.

825* Comparative Physiology of Symbiotes G 3

A consideration of various biochemical and physiological processes in protozoan and helminth symbiotes, and how these processes may be related to the symbiotic lifestyle. Pappas.

Sp Qtr. 3 cl. Prereq: 610 or 611 or 710, and Biochem 511 or equiv with written permission of instructor.

835 Seminar in Animal Morphology G 2-5

Inspection and discussion of developments in the science of animal morphology from the fine to gross levels of structure. Cook, Dalrymple, Gaunt, and Mitchell.

Sp Qtr. Arr. Prereq: 211, 420 or 620, 535 or 635, or equiv with written permission of instructor; 10 additional grad cr hrs in zoology. Credit for advanced courses in geol&min or anthropol may be substituted with written permission of instructor. Repeatable to a maximum of 10 cr hrs.

840 Behavior Genetics G 5

Development of ethological theory, genetic bases of behavioral differences, and evolution of behavior in laboratory, wild, and domestic species of both vertebrates and invertebrates. Rothenbuhler.

Wi Qtr. 3 1½-hr cl. Prereq: Genetics 500 or equiv; and Zoology 640 or Psych 300 or equiv.

841 Bioacoustics G 3

A study of the nature and biological significance of animal sounds.

Sp Qtr. 1 cl, 2-hr lab and field trip. Prereq: Permission of instructor.

851 Population Ecology G 5

Interactions of animal populations considered from the environmental, physiological, and biometrical aspects. Peterle.

Wi Qtr. 5 cl. Prereq: 313.01, 313.02, and 650.

855 Environmental Radiation G 5

Sources of radiation and transport of radioactivity in the environment, effect of radiation on populations, monitoring and assay techniques, analytical uses in environmental research. Carey.

Sp Qtr. 3 cl, 2 2-hr labs. Prereq: Permission of instructor.

860 Seminar on Historical Ecology G 2-5

Study of developing ecosystems through long spans of time through reconstructions of past communities from fossil evidence. Colinvaux.

Sp Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

861* Principles of Systematics G 3

A study of the principles and techniques used in the identification, classification, and nomenclature of organisms. Valentine.

Sp Qtr. 2 cl, 2-hr lab. Prereq: 15 cr hrs in zoology or entomology at the 600 level or above. Not open to students with credit for Biology 860.

880 Seminar G 2

Required of all grad majors in zoology during the first Au Qtr of registration.

Au Qtr. 1 cl.

881 Seminar G 1-3

Selected topics to be announced.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs.

890 Interdepartmental Seminar in Developmental Biology G 2

Students will present oral reports and lead discussion on research progress in specific areas of developmental biology.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs. Given cooperatively by Botany, Genetics, Microbiology, and Zoology.

891 Interdepartmental Seminar in Environmental Biology G 2

Selected topics treating the environmental aspects of organisms, populations, and ecosystems as they may relate to time, space, and human activities.

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs. Given cooperatively by Botany, Entomology, Microbiology, and Zoology.

896 Interdepartmental Seminar in Polar and Alpine Studies G 1-3

See Interdepartmental Seminars.

897 Interdepartmental Seminar in Natural Resources G 1

See Interdepartmental Seminars.

999 Research in Zoology G Arr

Research for thesis and dissertation purposes only.

Au, Wi, Sp Qtrs.

Agricultural Technical Institute

Office: Wooster, Ohio 44691, 216/264-3911

Agricultural Business Technology

Office: 089A, B, C, ATI Building

T201 Fundamentals of Information Processing U 3

An introductory study of fundamental concepts and operational principles general to all information processing systems, including experience with latest types of computers.

Su, Au, Wi Qtrs. 2 cl, 1 2-hr rec.

T241 Marketing of Agricultural Products U 3

A study of the agencies, functions, principles, and problems involved in the marketing of agricultural products.

Au, Sp Qtrs. 3 cl. Prereq: S Sc T151 or concur.

T243 Principles of Farm Management U 3

A study of the economic and management principles involved in the buying, financing, organizing, operating, and administering of an agricultural production unit.

Sp Qtr. 3 cl. 1 2-hr lab. Prereq: S Sc T151.

T251 Fundamentals of Marketing U 3

A general survey of the field of marketing including functions, policies, problems, structure, and strategies.

Au, Sp Qtrs. 3 cl. Prereq: S Sc T151 or concur.

T252 Agricultural Merchandising and Selling U 4

A study of the basic principles and concepts of selling and merchandising with emphasis on practical application to agriculture and agribusiness.

Au, Wi Qtrs. 3 cl, 1 2-hr rec. Prereq: T241 or T251.

T253 Agricultural Business Management U 3

Designed to develop an understanding of basic management principles with emphasis on the managerial functions of planning, organizing, directing, coordinating, and controlling.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: S Sc T151.

T263 Dairy Farm Management U 6

Introduction to the application of economic and management principles for acquiring, financing, organizing; operating the feeding, breeding, milking, personnel and marketing of dairy farm business. Oelker and Stock.

Sp Qtr 5 cl, 1 3-hr lab. Prereq: T241, Anml Tec T201, T203, T204, T251, Bus Tech T102. Not open to students with credit for Agr Bus T243.

T293 Individual Studies U 1-5

Designed to give students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs in any combination of individual studies.

Agricultural Mechanics and Engineering Technology

Office: 144D, E ATI Building

T201 Agricultural Shop Mechanics U 3

Principles of selection, care and use of materials and hand and power tools commonly used in agricultural maintenance shops.

Au, Wi, Sp Qtrs. 1 cl, 2 2-hr labs.

T202 Principles of Agricultural Mechanics U 5

Basic principles and application of agricultural mechanics in the areas of electricity, plumbing, heating and ventilation.

Su, Au, Wi, Sp Qtrs. 3 cl, 2 2-hr labs.

T212 Landscape/Horticulture Power and Equipment U 4

Selection, operation, adjustment, service, maintenance, and repair of machinery and equipment used in landscape and ornamental horticulture field work.

Sp Qtr. 2 cl, 2 2-hr labs. Not open to students with credit for T203.

T214 Mobile Industrial Power and Equipment U 4

Mechanics and operational procedures of tractors, crawlers, and mobile industrial equipment with emphasis on economic selection, efficient operation and preventive maintenance.

Wi Qtr. 2 cl, 2 2-hr labs. Not open to students with credit for T212 or T215.

T215 Tractors and Farm Field Machinery U 5

Mechanics and operational procedures of tractors and farm field machinery with emphasis on economic selection and efficient operation based on the specific tasks to be performed.

Au, Wi, Sp Qtrs. 3 cl, 2 2-hr labs.

T221 Agricultural Surveying and Mapping U 3

Surveying techniques, procedures and use of equipment for land measurement and mapping as required for proficiency in agricultural surveying and mapping by agricultural technicians.

Au, Wi Qtrs. 2 cl, 1 3-hr lab. Not open to students with credit for T205.

T222 Irrigation and Drainage for Landscape/Nursery/Turf U 3

Principles of selection, installation, maintenance and operation of equipment and materials used in ornamental horticulture irrigation and drainage systems.

Su, Au, Sp Qtrs. 2 cl, 1 3-hr lab.

T224 Irrigation, Drainage and Erosion Control Structures for Agricultural Lands U 5

Principles of planning, selection, installation, maintenance and operation of materials, structures and equipment used for erosion control, irrigation and drainage of agricultural lands.

Su, Au, Wi, Sp Qtrs. 3 cl, 2 3-hr labs. Prereq: T221, Pint Tec T211.

T231 Farmstead Systems for Storage and Processing of Agronomic Crops U 4

A study of practical methods of on-farm handling, processing and storage of cereal, field and forage crops.

Au, Wi, Sp Qtrs. 2 cl, 2 2-hr labs.

T235 Farmstead Systems for Dairy Production U 4

A study of the functional requirements, design, development, and operation of systems for dairy production.

Au, Wi, Sp Qtrs. 2 cl, 2 2-hr labs.

T236 Farmstead Systems for Livestock Production U 4

A study of the functional requirements, design, development, and operation of systems for beef, sheep, and swine production.

Au, Wi, Sp Qtrs. 2 cl, 2 2-hr labs.

T293 Individual Studies U 1-5

Designed to give students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs in any combination of individual studies.

T294 Group Studies U 2-5

Group studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

Agricultural Products Technology

Office: 144F, ATI Building

T201 Wood and Forest Products Industry I U 3

A study of the manufacturing and related industries associated with lumber, wood products or products derived from wood.

Au Qtr. 2 cl, 1 3-hr lab.

T203 Structure, Properties and Use of Wood I U 3

The classification, identification, and use of wood based upon wood structure and properties, defects in wood, moisture, relationship, and physical and mechanical properties.

Wi Qtr. 1 cl, 2 2-hr lab.

T204 Structure, Properties, and Use of Wood II U 3

Continuation of T203 with emphasis on the principles of wood deterioration and physical and mechanical properties which will provide a foundation for courses in wood utilization.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: T203. Not open to students with credit for T253.

T205 Industrial Wood Processes I U 4

A study of the equipment and procedures for lumber sawing, grading, milling and machining.

Sp Qtr. 2 cl, 2 2-hr lab. Not open to students with credit for T202.

T206 Industrial Wood Processes II U 4

A study of the principles, procedures, and equipment associated with seasoning, drying, and handling wood.

Au Qtr. 2 cl, 2 2-hr lab.

T207 Industrial Wood Processes III U 4

A study of the principles, procedures, materials, and equipment used in wood preservatives, treatment, and finishing.

Wi Qtr. 2 cl, 2 2-hr lab. Prereq: T205 and T206.

T208 Industrial Wood Processes IV U 4

A study of wood adhesives, laminating, composition boards, and wood joints.

Wi, Sp Qtrs. 2 cl, 2 2-hr lab. Prereq: T205, T206, and T207.

T211 Beekeeping I U 3

Fundamental aspects of beekeeping, including introductory elements of bee behavior, social organization, bee morphology, basic beekeeping equipment and the general handling of bees. Caulk.

Au Qtr. 2 cl, 1 3-hr lab.

T255 Wood Construction Materials and Methods U 4

A study of the materials, principles, and procedures commonly encountered in construction with wood. Emphasis will be on materials used in construction rather than construction techniques.

Au Qtr. 2 cl, 2 3-hr lab.

T257 Wood Products and Management I U 3

A study of the organizations, operations, and management of manufacturing plants in the wood products industry.

Wi Qtr. 2 cl, 1 2-hr lab. Prereq: T203, T204 and T205.

T258 Wood Products and Management II U 3

A study of overall marketing concepts in the wood industry and wholesale and retail management principles.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: T257.

T261 Beekeeping II U 3

Principles, practices and manipulations in beekeeping for the production of honey. Caulk.

Au Qtr. 2 cl, 1 2-hr lab. Prereq: T211.

T262 Queen Rearing U 3

Principles of applied theory and advanced breeding techniques in the rearing of queen bees. Caulk.

Au, Wi Qtrs. 2 cl, 1 2-hr lab. Prereq: T211.

T293 Individual Studies U 1-5

Designed to give students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs in any combination of individual studies.

T294 Group Studies U 2-5

Group studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

Agricultural Sciences Technology

T200 Occupational Internship U 1-6

Occupational experience in industry integrated with academic instruction. Internship is structured and supervised to insure a variety of experience pertaining to the student's interests and academic needs.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of technical program supervisor. Repeatable to a maximum of 13 cr hrs.

T202 Agricultural Technician Orientation U 2

Introduction of students to the technical educational institution, occupational goals and objectives, and occupational and technical orientation to a chosen field.

Au, Wi, Sp Qtrs. 2 cl.

T205 Practicum in Agriculture U 1-6

Supervised practical experience for the development and improvement of selected agricultural occupational competencies, highly coordinated and closely articulated with related campus classrooms and laboratory activities.

Su, Au, Wi, Sp Qtrs. Arr. Repeatable to a maximum of 12 cr hrs.

Allied Agricultural Sciences Technology

Office: 119E ATI Building

T201 Agricultural Biochemistry U 3

Fundamental chemistry of carbohydrates, proteins, fats, vitamins, enzymes, and hormones as applied to their function in plant and animal metabolism.

Au, Sp Qtrs. 2 cl, 1 3-hr lab. Prereq: Chem Tec T102.

T202 Agricultural Microbiology U 4

Fundamental characteristics of micro-organisms and their role in man's environment with special emphasis upon applications in agriculture and natural resources.

Wi Qtr. 2 cl, 2 3-hr lab.

T203 Introduction to Agricultural Research and Laboratory Science U 4

Introduction to the principles and concepts underlying the various techniques, methods, procedures, nomenclature, and other critical activities used by agricultural research and laboratory science technicians.

Au Qtr. 2 cl, 2 2-hr lab.

T204 Agricultural Research and Laboratory Technologies U 3

Basic techniques, procedures, and methods used by agricultural technicians to develop a high level of competency to perform essential research and laboratory tasks.

Su Qtr. 1 cl, 2 2-hr lab.

T205 Introduction to Animal Agriculture U 3

A study of the proper techniques of breeding, feeding, and raising animals with special regard to the responsibilities of a laboratory technician.

Au Qtr. 2 cl, 1 3-hr lab.

T250 Statistics for Agricultural Technicians I U 4

Study of elementary statistical methods, techniques and machines used to analyze research data. Baur.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: Tec Math T102.

T251 Statistics for Agricultural Technicians II U 4

A study of the methods and techniques used in the organization and analysis of research data.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: T 250 and Tec Math T102.

T254 Animal Health and Advanced Laboratory Techniques U 3

A study of the proper techniques of analyzing animal specimens and surrounding environment to aid animal researchers and veterinarians.

Sp Qtr. 2 cl, 1 3-hr lab.

T255 Animal Research Practices II U 3

A study of the management and handling of laboratory animals in research programs; nutrition and genetics and their importance to animal agriculture.

Au, Wi, Sp Qtrs. 2 cl, 1 3-hr lab. Prereq: T205.

T256 Environmental Resources U 3

A study of the principles, problems, and analysis techniques as related to the usage of environmental resources, especially air, water, and land.

Wi Qtr. 3 cl, 1 2-hr lab.

T257 Agricultural Products U 3

A study of the screening, quality control, research, and other aspects related to the science of production in agriculture.

Su Qtr. 3 cl, 1 2-hr lab.

T258 Plant Research Practices U 3

A survey of practices associated with plant research emphasizing those associated with greenhouse and other controlled environments.

Wi Qtr. 2 cl, 1 3-hr lab.

T293 Individual Studies U 1-5

Designed to give students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs in any combination of individual studies.

T294 Group Studies U 2-5

Group studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

Animal Sciences Technology

Office: 144A, C, D, E, H ATI Building

T201 Introduction to Dairy Cattle Production U 3

Survey of dairying including elementary elements of selection, feeding, breeding, disease control, milk production, dairy industry, and management practices.

Au Qtr. 2 cl, 1 3-hr lab.

T202 Judging, Fitting, Showing, and Classifying Dairy Cattle U 3

Comparative evaluation and classification of dairy cattle according to type, conformation, and breed characteristics. Skills practiced in fitting and showing dairy animals.

Wi Qtr. 2 cl, 1 3-hr lab.

T203 Dairy Cattle Breeding U 4

Dairy cattle improvement through selective mating, based on principles of heredity, pedigree evaluation, progeny testing, anatomy and physiology of the reproductive system, and improved breeding technology.

Wi, Sp Qtrs. 3 cl, 1 2-hr lab. Prereq: Biol Tec T101.

T204 Dairy Cattle Feeding and Nutrition U 3

Study of the nutritional needs of dairy cattle and of the principles and practices involved in providing balanced rations of various feedstuffs to meet these needs.

Au Qtr. 3 cl, 1 2-hr lab.

T205 Breeding for Livestock Improvement U 3

Principles of inheritance, variability, selection, and breeding of farm animals.

Su, Au, Wi, Sp Qtrs. 3 cl.

T211 Introduction to Horse Husbandry U 3

Fundamental survey of the development, function, behavior, production, and management of horses.

Au Qtr. 2 cl, 1 2-hr lab.

T212 Judging, Fitting, Showing, and Classifying Horses U 3

Comparative evaluation and classification of horses according to type, conformation, breed characteristics, and performance. Introduction to fitting and showing horses.

Au Qtr. 1 cl, 2 3-hr lab.

T213 Horsemanship and Equitation U 3

Fundamentals of equitation; designed to develop a unity between rider and horse through control, dressage, and schooling of the horse as a mount.

Sp Qtr. 1 cl, 2 3-hr lab.

T214 Feeding and Nutrition of Horses U 3

A study of the nutritional needs of horses and of the principles and practices involved in providing balanced rations of various feedstuffs to meet these needs.

Sp Qtr. 2 cl, 1 2-hr lab.

T221 Animal Anatomy and Physiology U 4

An introductory study of the structure and functions of the various organ systems of domestic animals.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: Biol Tec T101.

T222 Introduction to Animal Science U 3

An over-all look at the livestock industry with regard to meat production and marketing.

Au Qtr. 2 cl, 1 3-hr lab.

T223 Judging, Fitting, Showing, and Classifying Meat Animals U 3

Comparative evaluation and selection of meat animals according to type, conformation, and breed characteristics; skills and practices in fitting and showing beef, sheep, and swine.

Wi Qtr. 2 cl, 1 3-hr lab.

T251 Milk Production U 3

Anatomy, growth, functions, and health of the mammary gland.

Au Qtr. 2 cl, 1 3-hr lab.

T252 Dairy Cattle Health U 3

A study of the health and soundness of dairy cattle and relationship to growth, performance, and reproduction.

Wi Qtr. 3 cl, 1 2-hr lab.

T261 Farriering U 3

The shoeing and balancing of pleasure and performance horses, also corrective trimming of colts, hoof health and blacksmithing as a business.

Au Qtr. 2 cl, 1 3-hr lab. Prereq: T221.

T263 Horse Facilities and Environmental Control U 3

A study of the functional requirements, design development, and operation of housing.

Wi Qtr. 2 cl, 1 3-hr lab.

T265 Horse Management U 3

The management of various horse businesses analyzing profit and loss, establishing budgets and tools used to make key management decisions.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: T211, T214, T263 and Bus Tec T102.

T266 Horse Breeding and Selection U 3

Horse improvement through selective mating based on principles of heredity, pedigree, progeny testing, anatomy and physiology of the reproductive system and improved breeding technology.

Sp Qtr. 2 cl, 1 3-hr lab.

T267 Advanced Horsemanship and Equitation U 3

Advanced equitation with an emphasis on competitive riding and showing.

Su, Au, Wi, Sp Qtrs. 1 cl, 2 3-hr lab. Prereq: T213.

T268 Horse Training U 5

A study of the principles, theory and procedures involved with the training of horses from halter breaking to a finished performer.

Su, Au, Wi, Sp Qtrs. 3 cl, 2 2-hr labs. Prereq: T211 or T212. Students may enroll in either or both decimal subdivisions.

T268.01 Saddle Horse U 5**T268.02 Race Horse U 5****T274 Beef Production U 3**

The principles of management of a beef breeding and feedlot enterprise, coordinating production programs and evaluating economic performance.

Sp Qtr. 2 cl, 1 3-hr lab.

T275 Meat Technology U 3

A study of the meat processing industry including: procurement of the live animal, slaughtering, cutting,

sausage manufacturing, and retailing and nutritive value of meat items.

Au, Sp Qtrs. 2 cl, 1 3-hr lab.

T276 Sheep and Swine Production U 4

The principles of management of a sheep and swine breeding or feedlot enterprise coordinating production programs and evaluating economic performance.

Wi Qtr. 3 cl, 1 3-hr lab.

T293 Individual Studies U 1-5

Designed to give students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs in any combination of individual studies.

T294 Group Studies U 2-5

Group studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

Biological Technology

T101 Biology for Agricultural Technicians U 5

A basic biological science course intended to provide a foundation for study needed by technical workers engaged in agricultural technologies.

Au, Wi Qtrs. 4 cl, 1 2-hr lab.

T102 Crop Botany for Agricultural Technicians U 5

Introduction to the fundamental structures and processes of plants including plant anatomy, physiology, morphology, reproduction, and genetics as they relate to crop production.

Au, Wi Qtrs. 4 cl, 1 2-hr lab. Prereq: T101.

T104 Genetics for Agricultural Technicians U 3

Principles of inheritance and variability in plants and animals.

Au Qtr. 3 cl.

T293 Individual Studies U 1-5

Designed to give students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs in any combination of individual studies.

Business Technology

T101 Business for Agricultural Technicians I U 5

Study and practice of basic concepts, techniques, procedures, and principles of accounting commonly used by technical workers in agricultural businesses.

Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Not open to students with credit for Ag Business T202.

T102 Business for Agricultural Technicians II U 5

A study of basic principles involved in keeping and analyzing farm records from the farm management viewpoint.

Au, Wi Qtrs. 3 cl, 1 2-hr lab.

T293 Individual Studies U 1-5

Designed to give students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs in any combination of individual studies.

Chemical Technology

Office: 085B, C, D ATI Building

T100 Introductory Chemistry for Agricultural Technicians U 3

Introductory course in basic concepts of chemistry including atomic and molecular structure, types of matter, interactions between different material things, energy transfer and measurement system.

Su, Au, Wi, Sp Qtrs. 2 cl, 1 3-hr lab.

T101 Introductory Chemical Technology I U 4

Develops the basic concepts of chemistry which pertain to agriculture.

Su, Au, Wi, Sp Qtrs. 3 cl, 1 1-hr rec, 1 2-hr lab. Prereq: Tec Math T102. Not open to students with credit for T111.

T102 Introductory Chemical Technology II U 4

A continuation of T101 covering solution calculation pH, buffers, redox and those aspects of organic and biochemistry pertaining to agriculture.

Su, Au, Wi, Sp Qtrs. 3 cl, 1 3-hr lab. Prereq: T101. Not open to students with credit for T111 or T112.

T111 Chemical Technology I U 4

Develops those concepts of general inorganic chemistry which are of importance to agriculture.

Su, Au, Wi, Sp Qtrs. 2 cl, 1 2-hr lab, 1 1-hr rec. Prereq: Placement testing.

T112 Chemical Technology II U 3

A continuation of T111 emphasizing the areas of organic chemistry and introductory biochemistry.

Su, Au, Wi, Sp Qtrs. 2 cl, 1 3-hr lab. Prereq: T111. Not open to students with credit for T101.

T293 Individual Studies U 1-5

Designed to give students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs in any combination of individual studies.

Communications Skills Technology

Office: 229B, D ATI Building

T101 Developing Effective Communicative Skills U 3

Practice and instruction in working with the English language intended to develop the student's ability to listen, read and write.

Su, Au, Wi, Sp Qtrs. 3 cl. Not open to students with credit for T111.

T102 Interpreting and Designing Written Expression U 3

Designed to help the student in developing, writing, and presenting functional compositions to audiences.

Su, Au, Wi, Sp Qtrs. 2 cl, 1 2-hr lab. Prereq: T101.

T111 Developing and Interpreting Written Expression U 3

Designed to develop skillful responses to practical events. The course first strengthens basic skills and then uses these skills in functional academic and vocational situations.

Su, Au, Wi, Sp Qtrs. 3 cl. Not open to students with credit for T101.

T112 Essentials of Oral Communication U 3

Surveys the components and functions of oral communication and provides practice in applying effective oral skills to informal and job-related situations.

Su, Au, Wi, Sp Qtrs. 3 cl.

T113 Technical Reporting U 3

Techniques of collecting, organizing, preparing, and presenting pertinent technical data in agriculture by means of informal and formal reports, forms, procedures and technical papers.

Su, Au, Wi, Sp Qtrs. 2 cl, 1 2-hr lab. Prereq: T101 and T102, or T111. Not open to students with credit for T103.

T293 Individual Studies U 1-5

Designed to give students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs in any combination of individual studies.

Plant Sciences Technology

Office: 119C, D, F ATI Building

T202 Forage Crop Production II U 3

Adaptation, utilization, and culture of those crops grown for hay, pasture, silage and haylage.

Su, Au Qtrs. 2 cl, 1 3-hr lab.

T203 Field Crop Production U 3

A study of the economic importance, adaptation, cultural practices, harvesting, and cost analysis for producing the major field crops grown in Ohio.

Su, Au, Wi, Sp Qtrs. 2 cl, 1 3-hr lab.

T211 Introduction to Soil Science and Plant Nutrition U 3

A basic course dealing with the formation and physical, chemical and biological properties of soils which affect plant growth.

Wi, Sp Qtrs. 3 cl, 1 2-hr lab. Prereq: Chem Tec T101 recommended.

T212 Soil Formation and Application of Soil Classification U 3

A study of soil genesis and soil morphology including land classification and the preparation and interpretation of soil maps for appropriate land use.

Su, Wi Qtrs. 2 cl, 1 3-hr lab. Prereq: T211.

T214 Soil Physics and Engineering U 3

A study of the physical properties of soil along with the agronomic and engineering applications of the soil-water relationship.

Au Qtr. 2 cl, 1 3-hr lab. Prereq: T211.

T216 Entomology of Agronomic Importance U 3

Classification, identification, life cycle, hosts, habits, and kinds of damage done by insects of importance in agriculture. Principles of insect control, current problems, and trends are introduced.

Su, Wi Qtrs. 2 cl, 1 3-hr lab.

T218 Use of Fertilizers and Soil Additives U 3

The use of chemicals necessary for plant development and for the altering of soil properties.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: T211.

T220 Crop Management and Tillage Systems for Soil Erosion Control U 3

Application of the universal soil-loss equation and the role of crop management practices, tillage, crop residues and mulches in soil erosion and water management. Zimmerman.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: T211.

T221 Principles of Landscape Design and Planning U 3

A beginning course in landscape drafting, design and planning emphasizing proper planning procedures and considerations, drafting techniques and design representation, and the functional and aesthetic use of landscape materials to complement the family residence.

Au Qtr. 2 cl, 1 3-hr lab.

T223 Introduction to Turfgrass Management U 3

Principles and practices of turf establishment, maintenance, adaptation, and pest control of grasses and other plants under their different areas of use.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: T211 and Biol Tec T101 and T102.

T226 Turfgrass Culture U 3

The interrelationships of atmospheric and soil environmental factors influencing turfgrass growth and development.

Au Qtr. 2 cl, 1 3-hr lab.

T231 Greenhouse Environment Control U 3

An introductory course in floriculture with emphasis upon growing flowers under glass and in plastic structures.

Au Qtr. 2 cl, 1 3-hr lab.

T232 Propagation of Nursery and Greenhouse Plants U 4

Principles, techniques, methods, materials, and facilities used by commercial horticulturists to propagate plants with emphasis upon propagation of floral and greenhouse plants.

Au, Wi Qtrs. 3 cl, 1 3-hr lab. Prereq: Biol Tec T102.

T233 Basic Floral Design U 4

A basic course dealing with principles of making simple flower arrangements, type of designs, and styles; principles, tools, equipment materials, foliage, and flower types and color are covered.

Wi Qtr. 2 cl, 2 3-hr lab.

T234 Herbaceous Plants U 3

The identification, culture, and indoor and outdoor

use of bulbs, annuals, herbaceous perennials, garden roses, and foliage plants. Course includes selection, growth habits, pests and diseases and planting techniques.

Su, Sp Qtrs. 2 cl, 1 3-hr lab. Prereq: Biol Tec T102.

T235 Greenhouse Operations and Management I U 3

Introduction to greenhouse operation with emphasis upon commercial flower production.

Au Qtr. 2 cl, 1 3-hr lab.

T241 Elements of Nursery Operation and Management U 4

Introduction to the nursery industry including basic elements of materials and equipment used, layout, laws and regulations, cultural practices, and nursery business operations.

Au Qtr. 2 cl, 1 3-hr lab. Prereq: Biol Tec T102.

T243 Landscape Horticulture Plants and Materials I U 3

Identification, cultural practices and use of woody trees, shrubs, vines, and groundcovers.

Au Qtr. 1 cl, 2 2-hr lab.

T245 Arboriculture U 3

A detailed course dealing with tree culture, including planting, fertilization, spraying, pruning, cabling, and diagnosis of disorders as pertains to commercial arboriculture, city forestry and others.

Wi Qtr. 2 cl, 1 3-hr lab.

T261 Diseases of Agronomic Crops U 3

A study of the symptoms, identification, cause, and control for the major agronomic plant diseases.

Au Qtr. 2 cl, 1 3-hr lab.

T263 Turf Practices U 3

A thorough examination of the construction and design principles available for lawns, golf courses, roadside turf, and other recreational facilities.

Su, Wi Qtrs. 2 cl, 1 3-hr lab. Prereq: T211, T223.

T264 Weed Science U 4

A field study of Ohio's major agronomic weeds and their biological, cultural and/or chemical control. Herbicidal selectivity, pesticide safety and legal implications are also stressed.

Au Qtr. 2 cl, 2 3-hr lab. Prereq: Chem Tec T102 or equiv; Biol Tec T102 or permission of instructor.

T271 Landscape, Contracting, and Construction U 4

The techniques and use of materials for construction and installing various landscape plantings, features and structures such as garden terraces, walks, fences, mounds, pools and streams, irrigation, and outdoor lighting.

Au Qtr. 2 cl, 2 3-hr lab.

T272 Advanced Landscape Horticulture and Planning U 4

An advanced course in landscape drafting, design, and planning emphasizing practice in planning and pricing diversified landscapes.

Wi Qtr. 2 cl, 1 4-hr lab.

T275 Pest Control in Ornamental Plants and Turf U 5

Principles and practices of insect, disease, and weed control in landscape, nursery, turf, and greenhouse plants. Diagnosis, application and safety are emphasized.

Su, Sp Qtrs. 3 cl, 2 3-hr lab. Prereq: T243 and Biol Tec T102.

T276 Plant Diseases of Ornamentals and Turf U 3

Principles and practices in diagnosing and treating plant diseases on woody ornamentals and turf.

Au, Wi, Sp Qtrs. 2 cl, 1 3-hr lab. Prereq: T243, Biol Tec T102, or permission of instructor.

T281 Houseplants for Interior Decoration U 4

Identification, culture and use of tropical plants as houseplants and exotic plants cultivated in botanic gardens and conservatories.

Wi Qtr. 3 cl, 1 3-hr lab.

T282 Commercial Floral Design U 4

An advanced course in flower design, dealing with more complex designs such as wedding, hospital, church, and funeral work.

Wi Qtr. 2 cl, 2 3-hr lab. Prereq: T233.

T283 Greenhouse Operations and Management II U 4

The principles and practices of greenhouse potted plant productions including azaleas, begonias, bulbs, chrysanthemums, cyclamen, geraniums, hydrangea, poinsettias, roses, African violets, foliage plants, bedding plants, and other plants.

Wi Qtr. 2 cl, 2 3-hr lab. Prereq: T235.

T284 Landscape Horticulture Plants and Materials II U 3

An advanced course concerning the in-depth study of the identification, culture, and use of less common woody, deciduous and evergreen cultivars of ornamental plants.

Au, Wi Qtrs. 2 cl, 1 3-hr lab. Prereq: T243.

T285 Retail Flower Shop Operation U 3

Principles and practices in management and operation of the retail flower shop.

Au, Wi, Sp Qtrs. 2 cl, 1 3-hr lab.

T286 Outdoor Gardening U 3

Fundamentals of basic gardening with emphasis on planning, planting, and maintaining decorative utilitarian gardens.

Su, Au, Wi, Sp Qtrs. 2 cl, 1 3-hr lab.

T293 Individual Studies U 1-5

Designed to give students an opportunity to pursue studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs in any combination of individual studies.

T294 Group Studies U 2-5

Group studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

Social Sciences Technology

T151 General and Agricultural Economics U 4

A study of economic principles applied to agricultural and personal financial decisions. Topics discussed:

production principles, supply and demand, exchange and distribution, macroeconomic principles and financial markets.

Au, Wi Qtrs. 4 cl.

T152 Human and Personal Relations U 3

Designed to help the student develop an understanding of individual growth and human behavior and the establishment of meaningful human relationships.

Su, Au, Wi, Sp Qtrs. 3 cl.

T153 Society and Culture of Man U 3

Study of human group interactions (man's relationships with others), the organization of social groups, and the impact of groups on individual action.

Su, Au, Wi, Sp Qtrs. 3 cl.

T154 American Institutions U 3

A study of the development of social, business, labor, and political institutions and the effect of those institutions upon the individual.

Wi, Sp Qtrs. 3 cl.

T155 Human Physical Health U 3

Practical concepts of human physical health, reproduction, and nutrition with emphasis on actual applications to present and future health problems and needs.

Su, Au, Wi, Sp Qtrs. 3 cl.

T293 Individual Studies U 1-5

Designed to give students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs in any combination of individual studies.

Technical Mathematics

Office: 085A ATI Building

T101 Introductory Technical Mathematics U 5

Designed to provide a foundation in mathematics for those students lacking such skills and abilities.

Su, Au, Wi, Sp Qtrs. 3 cl, 1 2-hr rec.

T102 Mathematics for Agricultural Technicians U 5

Mathematical computations, conversions, calculations, and measurements common to the field of agriculture.

Au, Wi, Sp Qtrs. 3 cl, 2 1-hr rec.

T293 Individual Studies U 1-5

Designed to give students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs in any combination of individual studies.

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